The Journal of Nervous and Mental Disease

Vol. 119, No. 1 JANUARY 1954 Serial No. 865

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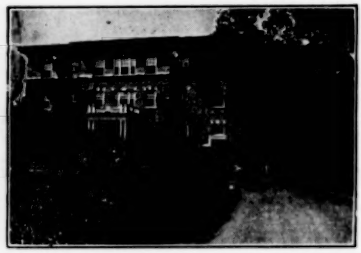

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The Journal
Nervous and Mental Disease

Vol. 119, No. 1 JANUARY 1954 Serial No. 865

NEUROPSYCHIATRIC PATIENTS REPORTED CURED AT ST. BARTHOLOMEW'S HOSPITAL IN THE TWELFTH CENTURY

Selected Cases from the Book of the Foundation of St. Bartholomew's Church in London

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AND

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At the 800th anniversary of the founding of St. Bartholomew's Hospital, Sir Norman Moore, Consulting Physician to St. Bartholomew's Hospital and a scholar long interested in the history of that institution, published *The Book of the Foundation of St. Bartholomew's Church in London, the Church Belonging to the Priory of the Same in West Smithfield* (4). This was edited from an original manuscript in the British Museum. It comprises 63 pages and is the English translation of the original Latin text describing the foundation of St. Bartholomew's Hospital. Included in it is perhaps the first set of clinical case records in the English literature published from any hospital.

The Book of the Foundation consists of two parts. In the first book we find miracles performed in the days of remembrance of the Hospital's founder, Rahere; and in the second book, those things seen and done in the days and times of his successor. Twenty-nine cases are reported in the first book, 28 in the second. These are chronicles of miracles rather than clinical treatises; but it is possible for a physician to make a presumptive diagnosis in most of them 827 years later.

Little is said of therapy, and there was apparently no treatment other than the effect of the faith which permeated the entire medieval

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fabric. Among the 57 cases, some are simple records of miraculous escapes such as a poor man delivered from prison, or a sailor saved at sea, or a man saved from shipwreck.

A number of cures are mentioned in passing, without any details of a clinical nature. These include "aching head," "ringing in the ears," "blurred sight," and the like. Twenty-two cases appear to be of a neurologic or psychiatric nature, or at least such as today might be referred to a neuropsychiatrist. The most obvious of these are "madness," "loss of sight," "palsy," the "falling evil," etc. Therefore, about one third of the earliest recorded cures might thus have been seen by the neurologist or psychiatrist today, but the cures were vastly quicker than could be expected from our modern consultants.

It is the purpose of this paper to consider the records of these selected cases. Other recorded cases, such as one of dropsy or one of rheumatism, treated by a system of graduated exercise (Note 1) although tempting to report, will be left for others to pursue.

We cannot understand the significance of these cases without appreciating the nature of medieval London in the 12th century; nor can we fully comprehend the significance of the religious experiences involved without knowing something of Rahere, the founder of St. Bartholomew's, and his surroundings.

London

Eight hundred years ago the English tongue was spoken by the common man but French was the language of the ruling class. The First Crusade was ended; the Second had not been preached. King Henry I reigned. London was surrounded by a high wall with towers and fortified gates. St. Paul's Cathedral towered above the other buildings and the hundred churches. The Keep of London Tower was still new. A great plain, Smithfield, lay north of the wall and continuous with pasture, field, and forest. There were also swampy places, spotted with ponds and marshes (Fig. 1). A horse fair was held here each Friday. The place was then, and today still is, the meat center for London.

While one or two hospitals were probably established in England before St. Bartholomew's, it is the oldest still in existence and the oldest of which we have a definite and clear history. It can properly be called the mother hospital of the English-speaking world.

London, a city more than 2000 years old, has passed through a dozen different phases. There was a prehistoric London, at least three Roman Londons, a London under the Anglo Saxons, a London under the Danes, a Norman London, a London of the Tudors destroyed by the

Great Fire, a London of the days of the periwigs in the 18th century which passed into Victorian London, which was replaced by the modern city, whose physical appearance and historic role changed once more with World War II.

London was attacked again and again during the period from 500 to 1000 A.D. It was taken several times, but its experience when it was taken was the experience of most Roman cities of Britain: the captors usually left the city largely to its few remaining inhabitants. In the center of the London of Norman times was the area of the old British Roman town. To the north was the area settled by the Anglo Saxons who, although they had taken the city, did not settle it; to the west was the area of Danes and Norwegians, who likewise seemed to occupy little of London proper. Between the three divisions was a great open space which was sparsely settled and was known as Smithfield—a cor-

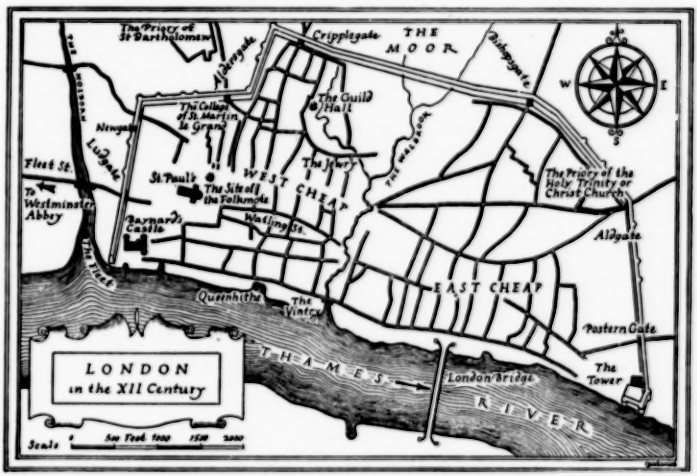

FIG. 1.—Map of London in the 12th century. (From *The Conquerors*, by Thomas Costain. Doubleday, Doran and Co., 1949. By permission of the author, artist and publisher.)

ruption of "smooth field" (Fig. 1). The area had been a burial ground for the Romans 750 years earlier. It was largely marsh and fen—a "no man's land" and not valued highly; a piece of land which brought to Edward the Confessor and to William the Conqueror and his successor, Henry I, the sum of five shillings a year.

London was practically a Roman city from its establishment, and remained the center of Roman tradition, culture, and thought for

hundreds of years thereafter, gradually changing and becoming anglicized, but still Roman. It was largely destroyed in the 9th century and a reconstructed city was begun which forms part of the picture of London at the time of the foundation of St. Bartholomew's Hospital. Three structures really remain of old Roman London up until the time of the invasion of the Normans: first, the Roman Wall itself; second, a series of docks, since London was the great commercial maritime city of Europe in the Middle Ages; and, lastly, London Bridge, the crossing of the Thames, which has been in its original location in one form or another for almost 2000 years.

The founding of St. Bartholomew's Hospital begins with the Norman invasion. It is possible that Rahere, the founder of the Hospital, was the son of some man-at-arms who crossed the English Channel with William the Conqueror. To a certain measure the establishment of the Hospital can better be understood in the light of changes which occurred in England after the Norman invasion, of which the Hospital was a part. We are often taught that the Norman invasion made a complete and immediate change in England and its population. That is hardly so. The Norman invaders and the English had much in common; they were made up largely of mixed stock, quite like that in modern America. They were partly British, partly Scandinavian, and partly North German, and the Norman invasion of England was more a dynastic and cultural change than a racial one.

Yet there was a change in tempo with the Norman invasion. Perhaps 12,000 or 15,000 people came into England, and they acted as a leaven which for the next hundred years produced a great outburst of energy. This energy extended into all lines—into building, into government, into social life; and in 100 years the country was all but transformed by this stimulus. Within 75 years there were built in the city of London close to 150 structures, many so solid that their remains may be seen today. In these 75 years, the city's structure was completely rebuilt, including St. Paul's Church, which men said was so vast that it would never be completed. London in these medieval times was not a place of quiet, tradition, and stagnation. They were times of activity and constructive change, of new ideas—social, economic, and intellectual. One cannot turn to this period of the Middle Ages without realizing that there was a fresh pulsing life in Europe.

The Founding of the Hospital

The founding of St. Bartholomew's Hospital reflects this period of activity. It was built on the unwanted, unused land called Smithfield, a portion of which was granted to Rahere, the founder, by King Henry I.

Rahere's only resource was his determination to build a hospital, and the task was done practically without funds.

The specific account we have of the founding of the Hospital is that contained in a manuscript entitled *Liber fundacionis ecclesie Sancti Bartholomei Londoniarum pertinentis prioratue eiustem in Weste Smythfelde* ("The Book of Foundation of St. Bartholomew's Church in London, the Church Belonging to the Priory of the Same in West Smithfield"). It is written on 86 pages of vellum and is preserved in the British Museum. It is only by good fortune that the book remains with us. It stood in a case in the British Museum beneath a bust of the Tenth Caesar. In the fire which destroyed that collection in 1731, the flames stopped just short of the case under this Caesar (Note 2).

The manuscript contains a Latin version of 40 leaves and an English version of 38 parchment leaves. According to Sir Norman Moore, it was prepared about the year 1400. However, the English version is a translation and copy of the Latin one, for the original Latin manuscript was written between the years 1174 and 1189. We can limit the time to this interval because the author of the manuscript now preserved says he was one of the Augustinian Canons of the Priory of St. Bartholomew. The author of the Latin manuscript mentions no later king than Henry II, and says that he talked with those who remembered Rahere (who died in 1143) and that he was a Canon during the Priory of Thomas, Rahere's successor (who died in 1174). He mentions ecclesiastical privileges received from Popes but none of a later date than 1181. He also mentions the castle of Munfyches in the city as still standing, and we know that this structure was demolished in 1189. Thus it is evident that the manuscript was written between the years 1174 and 1189 (4).

In the middle of the English translation where the original Latin has "Henry II," the scribe has written "Richard II," and it is more than likely that he inadvertently put the name of the reigning king for the past sovereign, which further helps to date the manuscript (4). The English version is written in late Middle English, quite like "Chaucerian" English but somewhat easier to translate (Note 3).

The history of the foundation is essentially a spiritual history of the Church, the Hospital, and its founder. At its inception it was presumed to be given special Divine consideration:

> Our seniors tell us that in the beginning one eventide when darkness drew upon, a light was seen to be sent from Heaven, shining on this Church, abiding one hour. The light afterward returned up to Heaven. How great a token this was of pity and Heavenly grace was openly shown afterwards by the multitude of tokens in the same place.

The Book of the Foundation contains all the definite information we have about Rahere. According to tradition he had been the king's jester, and is so pictured by Kipling and others (3).

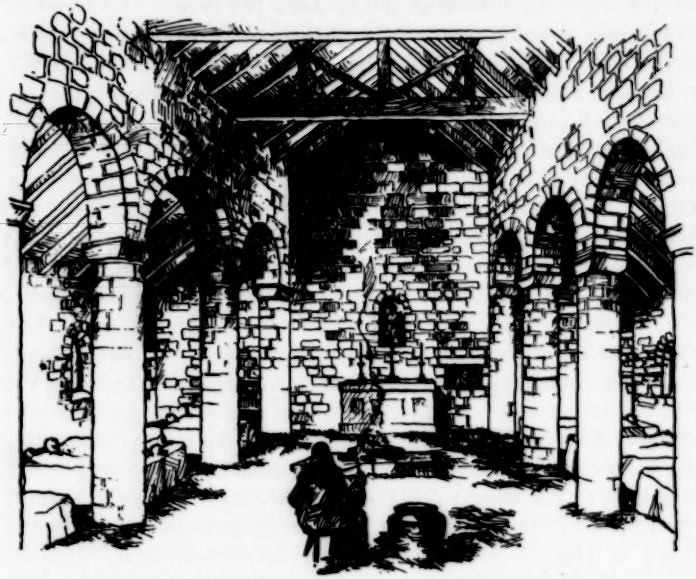

FIG. 2.—Sketch of the interior of one of the wards of the original Hospital as reconstructed by one of the authors (R.E.S.), based on contemporary documents and architectural remains.

The architecture is assumed to be early Norman. The style of masonry is based on that of the Church of St. Bartholomew the Great, still standing in London, and associated with the Hospital, and on other fragments of contemporary Norman stonework in London. The timbering also is from contemporary sources.

The original Hospital probably had four wards, one for each Sister, each with about twelve beds. These must have been large, for in times of war or pestilence as many as 8 patients were placed in a bed. In most early medieval hospitals the ward was divided by pillars into a central aisle and lateral recesses that contained the beds. The floor was covered with rushes or straw. The walls were most likely whitewashed. There was an altar at the end of the ward. As was common until the 14th century the Host was placed not on the altar proper, but in a separate recess or ciborium. This structure is shown in the receptacle of the wall, to the right of the altar. A number of contemporary English and Scottish churches contain such ciboria.

A fire is shown in a central hearth, the smoke passing through the roof. Records indicate that the wards were heated, for they include grants of wood from royal forests for fuel to St. Bartholomew's Hospital.

The nurse or sister is dressed in the contemporary habit of the Order of St. Augustine. The sister is pictured spinning flax with distaff and spindle. Records, presumably of the period, indicate that one of her duties was to receive flax from the Matron, and to account for it in sheets for the patients. Beside her is a large water jar. These details are drawn from *The Ordre of the Hospital of S. Bartholomewes in West smythfielde in London* (6) which probably reflect the original conditions of the Hospital, although they were published much later.

THE HOSPITAL

'Tis a tale so strange that it still seems new,
This tale of old Rahere
The Jester who founded the Home of Mercy
That gives the whole world cheer.
Then list—'Twas in Norman Henry's reign,
When the Saxon ruled no more,
That the Court had chosen an English fool
At whom to laugh and roar.

. . .

Meanwhile the old Jester sleeps his sleep
Beneath his Norman nave
While his Hospital struggles on
By his stout soul more brave,
And England's name is spread abroad
Amidst its grateful hearts
For this golden legend of London Town
Of the Jester who founded Bart's. (8)

Rahere apparently was closely connected with the royal court. Early in the 12th century he went to Rome on a pilgrimage. He was a young man, perhaps thirty-five. The reasons for his pilgrimage are not known. They may have been political difficulties or religious belief. While journeying to Rome he fell ill (possibly with malaria) and was placed in a refuge for the sick on the island of Aexculapias in the Tiber. There, while in a semiconscious state, he had a vision. St. Bartholomew appeared to him and directed him to found a hospital in London (Note 3).

Rahere worked his way back to London, and convinced Richard, Archbishop of London, of the need for the hospital. He then obtained the king's ear, and was granted a charter. He gathered around him, apparently by persuasion (*The Book of the Foundation* is full of it) a group of children, young men, and old people who drained and ditched the area. Then were built the Church of St. Bartholomew the Great, a major part of which still stands, and the Hospital of St. Bartholomew adjoining it. In 1123 both were open for service.

The Hospital began with little if any money, although certain fees from the annual Smithfield Fair were allotted to it by the Crown. But as told in *The Book of the Foundation,* the chief support came from begging. Later small gifts of land or land-rents were received. These, if one may judge by the donors' names, were from humble folk, and their size was small. But as time went on more wealthy patrons appeared, and the property and income of the Hospital increased. By the time of the Reformation the Hospital income, by beds, was quite com-

parable with that of institutions of today, when due allowance is made for the great purchasing power of money in medieval days.

There is no contemporary picture of the first hospital building nor are there any structural remains. However, a conjectural reconstruction of a ward in the early institution is shown in Fig. 1.

Case Reports

The following cases are taken from *The Book of the Foundation*. That they themselves are a highly select set of miracles cannot be doubted, for while there is certainly one cure of hemiplegia reported, and probably two, nothing is said of Richard, Bishop of London, who was instrumental in obtaining the Royal Charter for the Hospital. He died in 1128, and had been unable to participate in public affairs after an attack of hemiplegia in the latter half of 1123, the year of the founding of the Hospital.

The following complete translations from "Chaucerian" English are of the neuropsychiatric cases from *The Book of the Foundation,* in the same order that they appear in Tables I and II.

Book I, chapter 13.

Of Crippled Wolmer Cured There

There was a sick man, Wolmer by name, depressed by a grievous illness which had lasted a long time, and who seemed miserable to all who saw him; his feet lacking their natural strength, hung down, his legs cleaved to his thighs, part of his fingers were bent back to the hand. The burdensome weight of his body, which always rested on two little stools, he drew behind him. And to increase his wretchedness, great poverty, even more of an affliction to him than his sickness, was added: since the man who could neither work nor walk was denied the means of making his living. This wretchedness was so much more grievous to him in that it had lasted a long time. In truth, for almost thirty years he had endured this serious sickness. And thus, sometimes creeping, sometimes borne by the help of others, he sat in Paul's Church in London, asking alms of those who entered.

When this was done, the acceptable time now came, the year of benignity in which Rahere had laid the foundations of his holy temple, and the fame of the new work, a sweet odor, as it were, which spread from the mouths of all the people, could not be kept from him. By the mercy of our Lord, he conceived a pleasant and sincere desire to be borne to that place, there to ask God's help. And, carried there by his friends in a basket, he fell down in front of the altar, directing his humble prayers to heaven, and to the high and glorious merits of the blessed Apostle, offering them to the high and dreadful Judge, in order through them to obtain forgiveness of sin and his bodily health. And, at once, that well of pity,

TABLE I.—A Chronicle of Miracles from Book I: Selected Neuropsychiatric Cases

Case No.	*Chapter*	*Chief Complaint(s) and Duration*	*Age, Sex*	*Possible Diagnosis*	*Result of Visit*
1	13	Legs and hand crippled for years	30 M	"Rheumatism"; conversion hysteria	Immediate cure
2	18	Right hand fixed to left shoulder, head held down; duration not given.	"Growing man"	"Rheumatism"; conversion hysteria	Cure in unspecified time*
3	19	Confined to bed for "long time," came "in last hour's life"	Adult F	Insufficient data; neurasthenia	Cure in unspecified time*
4	20	Blind from birth	Child M	Insufficient data	Cure within hours
5	21	Dumb; duration not given	Young adult M	Hysterical aphonia	Cure with 24 hours
6	24	Thighs held in flexion; much weeping; duration not given	Adult F	Insufficient data; hysteria	Cure in unspecified time*
7	25	Insomnia 7 years	Adult M	Psychoneurosis	Fell asleep in church
8	26	Dumb for "long time"	Child M	Mutism	Spoke, in unspecified time*

*Although the time is unspecified, in most instances it would seem that the cure occurred within one or two days.

TABLE II.—A CHRONICLE OF MIRACLES FROM BOOK II: SELECTED NEUROPSYCHIATRIC CASES

Case No.	*Chapter*	*Chief Complaint(s) and Duration*	*Age, Sex*	*Possible Diagnosis*	*Result of Visit*
1	1	Deaf, dumb, blind, crippled; frothing at mouth, beating of breasts; duration not given	"Maid"	Hysteria	Joyfully skipped forth in unspecified time*
2	9	Vision, loss of wits; sudden onset, recurrent? Duration?	Young M	Probably schizophrenia	Recovery in short time
3	10	Insanity, violence; duration not given	Adult M	Paranoid schizophrenic or manic-depressive, psychosis?	Recovery within 48 hours
4	11	Falling evil	Child M	Epilepsy	Recovery in short time
5	12	Hallucinations	"Maid"	Schizophrenia	Cure in unspecified time*
6	13	Blindness and fever, much sorrow; duration not given	Adult M	Malaria? plus psychoneurosis	Cure in unspecified time*
7	15	Dumb Duration?	Adult M	Hysterical aphonia	Cure within one day
8	19	Insanity, mania and crippled Duration?	Adult F	A woman of the streets. Toxis psychosis or schizophrenia	Cure in unspecified time*
9	20	Palsy Duration?	Adult F	Hysterical paralysis? Cerebrovascular accident?	Cure in unspecified time*
10	21	Flexion, contracture legs, long time in bed	"Maid"	Hysterical paralysis	Cure within 24 hours
11	22	Loss of strength; duration?	Adult F	Neurasthenia or hysteria	Rose from litter
12	23	Blind; duration?	Child M	Insufficient data	Recovery in unspecified time*
13	24	Hemiplegia; long time	Adult F	Insufficient data	Recovery in unspecified time*
14	25	Loss of reason	Child M	"Mad"; insufficient data	Recovery in unspecified time*

*Although the time in unspecified, in most instances it would seem that the cure occurred within one or two days.

that was and is open to the menstruating woman and the sinful man, was bestowed at his petition and a stream and river of health and grace was made to flow from him. And afterwards, when all his bodily defects had gradually disappeared, he stretched his legs to the ground. And soon, when he raised himself up, all his limbs assumed their usual positions. He went away a new man. Then how great a cry of those who were present was lifted up to heaven! What tears were shed for joy, what praises were given and paid to God because of so marvelous and wonderful a miracle, a devout soul can imagine better than words can express. News of this event was immediately spread throughout the city. The people of both orders, the clergy and the laity, were greatly inspired. And from that time the noble matrons of the city kept their night watch; the clergy and the laity by companies, filled with great devotion of soul and eagerness of heart, frequented this place. And on their frequent visits, they, together with the founder, gave solemn praise to God.

BOOK I, CHAPTER 18.

Of a Young Man, Not Yet Grown

There was a young man, Osberne by name, whose right hand was fixed to his left shoulder. His head, pressed down to the hand, lay immovable. It was impossible to move the hand from the shoulder, nor the head from the hand. When the man approached the altar of the blessed Apostle Bartholomew, with lamenting tears he humbly besought his mercy. And he desired graciously to be heard. When his limbs were free, he and all those who were present with worthy praise magnified God, who is marvelous in his saints.

BOOK I, CHAPTER 19.

Of a Crippled Woman

A certain woman in Saint John's Parish in London, enfeebled by a long illness, continually kept her bed. And, her health despaired of, she was at the point of death, when her neighbors told her how many wonderful things, by the might of God, were done in the Church of the Holy Apostle. By virtue of her unconquerable faith, she asked to be carried there, hoping for the best. And when she was brought there, she proved by experience what she had heard, feeling the profit and attaining the purpose of her petition, granting that our Lord Jesus Christ, the Author of our Faith, who heals the contrite in heart and binds up their bruises.

BOOK I, CHAPTER 20.

Of a Child Blind From His Birth

A child blind from birth, with someone leading him, and his father and mother following, was brought to the solemnity of the glorious Apostle. And as he entered the church, he fell down to the earth, and for a while turned himself first one way and then another. During this time he

rested under the hand of the holy physician who lights every man coming into this world, in whose light we all see light. And soon the blindness which had been present from birth was gone. When blood from the eyes ran down over the cheeks, light and sight were restored to the sick boy, not what he had before, for then it was first given to the child. And then he recognized his parents whom he had never seen before; and he plainly called several things by their proper names.

BOOK I, CHAPTER 21.

Of Wyndmund Who Was Dumb

A young man, Wyndmund by name, had lived for some time at the Court of Eustace de Brooke. He was dumb, as far as anyone who had any knowledge of him knew. This man, greatly disturbed by his inability to speak, and depending on the mercy of God and the merits of the Apostle, went to his church and continually kept devout watch there; and he faithfully asked for what he desired. One day, after compline (the religious exercise which completes and closes the service of the day) the bond of his tongue was loosened, and with a loud voice he praised the might of the Apostle, thanking and blessing the power and the wisdom of God, which open the mouths of the dumb and make the tongues of children loose and fluent.

BOOK I, CHAPTER 24.

Of Godena the Cripple

A certain woman, Godena by name, had her legs bent back to her thighs, so that she could never stand up, but led a tedious life because she had to sit all the time. One time, with sorrow and weeping, she was borne to the church of the blessed Apostle, and she asked for the gift of perfect health and obtained it, granting that our Lord Jesus Christ who frees men set in the stocks (or imprisoned men) raises up the down-trodden, and directs the right ways.

BOOK I, CHAPTER 25.

Of a Man Who Couldn't Sleep

A certain man at Norwich, who is well known, when once he had to undergo blood-letting, and did not look after himself as he should have done, had lost the rest which sleep gives. How good and how necessary it is to man, it is not necessary to dwell on now. This rest lightens long and daily sweats and labors, and after work prepares man to labor again, and this rest keeps the natural powers not only of men but of beasts as well, sound and whole. The said man, lacking this rest, passed every night for almost seven years without sleep. And after while his sinews were contracted, pale and lean, wrinkled about the mouth and all discolored. It seemed to people who saw him that all his bones could be counted. And need was added to the accumulation and increase of his grief and feeble-

ness; so great was it that the man, formerly rich in friends and money, was now destitute of both and had become idle. He was unable to provide anything either for himself or for his family. In the seventh year of his affliction, when the relics of the same church of Saint Bartholomew were brought and placed in the oratory of Saint Nicholas at Yarmouth, this man devoutly approached the same relics and humbly prostrated himself, asking and seeking a remedy. And he found what he was seeking. He rang at the door and our porter opened it for him, and magnificently showed him the compassion of his mercy. And groveling to the ground, he multiplied his prayers and began to sleep. And when he had slept for some time, he arose restored. And he went back to his own family, giving thanks to God, who mortifies and revives, smites and heals.

BOOK I, CHAPTER 26.

Of a Dumb Child

And a child who had been dumb a long time, to the praise of God and the glorious Apostle, the might of God opened both tongue and mouth, and he spoke very well.

It will be seen in the first Book there are eight probably neuropsychiatric cases (Table I). The rapidity of the cure is such that if many of these cases were not conversion hysteria, most of the disability was on the basis of functional overlay. The bizarre clinical picture in case 2 suggests an hysterical phenomenon. Case 3 appears to be clearly a psychoneurosis, but case 4 is obscure; a child would not likely be blinded from birth from an organic lesion and cured abruptly within hours. The remaining cases seem clearly hysterical or psychoneurotic, while no neurologic disorder comes to mind. They include among other things a man who had been unable to sleep for seven years who was cured by falling asleep in the church!

In the second Book, cases which follow (Table II), there seem to be 4 of hysteria, although one could have been a cerebrovascular accident; 4 cases of schizophrenia (although 2 might conceivably be other types of psychoses); one case of epilepsy "cured" without follow-up; at least two psychoneurotic and three neuropsychiatric disorders too incompletely reported to classify. It should be borne in mind that it is not possible to make an absolute diagnosis in any of these cases with such fragmentary reports written by a layman more than 800 years ago.

BOOK II, CHAPTER 1.

Of a Deaf Girl, Dumb, Blind and Crippled

In the 1148th year after the incarnation of Our Lord (i.e., 1147) the twelfth year after the death of Henry II, King of England, when the golden path of the sun recalled to us the desired joys of the celebration of a festi-

val, this holy place was illumined with new miracles, when there was a new solemnity of the blessed Apostle. Sick people suffering with different kinds of sore lay quietly prostrate in the church with its shining lights, beseeching the mercy of God and the presence of St. Bartholomew. And certainly the indulgent mercy of God, always available to faithful petitioners who make vows, was not far from them. One man was jubilant over the cure of his aching head, another over the restoration of his ability to walk, which he lacked, another over the cure of the ringing in his ears; another was freed from the deterioration of his limbs; another was relieved from inflammation of the eyes, and enjoyed seeing clearly once more. Many others were glad to be free from the vexation of fevers, giving thanks to the honor of the Apostle. At a certain time the people everywhere applauded and were glad because of these things. Some people heard weeping and wailing in the left corner of the church, where a certain deaf and dumb girl was lying, who lacked the sight of both eyes and whose crippled legs were bent back; her wailing parents lay groveling on the floor and never ceased praying, until everything necessary for such a great celebration had been finished by the clergy. It therefore pleased the goodness of God to hearken to their petitions, and not to have his creature vexed any longer by the evil power, but to be fully and perfectly delivered from every bond of sickness. So when the canons were singing the second evensong, the girl began to be grievously tormented, worse than usual, frothing at the mouth, smiting her breast, and beating her head hard against the ground. When they came to the hymn of Our Blessed Lady and the time for the altars to have incense, the foresaid girl began to cry in a piercing voice, and she stretched out her limbs with great power. Soon joyfully skipping forth, she wiped and dried her restored eyes with the linen cloth that she was wearing. And thus standing still while her hearing was restored, and having so thankfully received the acceptable light of seeing, she ran to the table of the holy altar, stretching out both hands to heaven. And so she who was dumb a little while before, now perfectly sounded her words when she joined in the praise of God. And she declared to her parents, weeping for joy, that she was free from every kind of sickness.

BOOK II, CHAPTER 9.

Of a Young Man, Robert by Name

A certain young (man) comely of person, Robert by name, who had lived at Court from his earliest years, planned to go from Northampton to London. He had to go through a thick wood on the way, and becoming tired, lay down on the ground to rest and refresh himself for a little while with sleep, so that he could make better time. But while he was resting, he had difficulty, and while he wanted to refresh his weary legs with a little rest, he became entangled in the snares of his enemy. He was robbed of his natural wits in his sleep. His old enemy appeared to him, in his sleep, in the form of a very fair woman, who, with a flattering countenance, seemed to sit at his head. And when she had flattered him a good while

with blandishments and soothed him, she put a little bird in his mouth and vanished. When the man awakened, he was afraid of this unusual vision and immediately lost his wits, and his reason was deprived of all power, and he did not know what to do or not do. Controlled by madness, he wandered, running now this way, now that way. Not knowing what he was doing, he went wherever the impetuousness of the evil madness drove him. He was finally taken to London and brought to the church of Saint Bartholomew. And there in a short time he recovered his reason. He stayed there a little while, blessing God who has vouchsafed to intrust to his Apostles his excellent power to heal the sick, cleanse the lepers and to cast out fiends.

BOOK II, CHAPTER 10.

Of a Certain Knight, Radulph by Name

A certain knight, Rayf by name, of the household of William de Monfichet, when he had made his way from Essex to London, by the judgment of God was ravished by a fiend and made mad and seized by a terrible unreason. And when he became so mad, he slid down from his horse and rent his clothes. He scattered the money that he had with him and threw stones at the people that he met. Part of the time he wandered in the woods and part of the time in the hills. And from time to time he mixed among the crowd, threatening or frightening those whom he met. Although he strongly resisted, this man was taken to the same church, and his mind was restored when he had spent two nights there.

BOOK II, CHAPTER 11.

Of a Certain Man's Son

There was in the town of Barnack a certain man, Spylman by name, who was a ploughman and sold wood. And he came to London with wood to sell. Many people knew he had a child who was grievously ill with epilepsy. According to doctors, epilepsy is a sickness which compresses the ventricles and the spaces of the brain, impeding the use of functions such as sight and hearing and also interferes with other bodily functions and tires out the whole body with much suffering. This child was brought to the foresaid church when he was struggling with this sickness, to the solemnity of the glorious Apostle, and when the fourth lesson of his passion had been read, and all his members restored to health, he came to kiss the altar. And then he was inflamed with a great devotion. Every one present, not only the common people, but also the clergy, praised God and the blessed Apostle. Thanks were given to God for His goodness and because His mercy is in the world.

BOOK II, CHAPTER 12.

Of the Daughter of Wydmund the Priest

A priest, Wydmund by name, who was in charge of the church of Saint Martin located in the turn of the road leading to Westminster, had, at the

order of the Bishop of London, for many years been dean of the churches nearby to discuss ecclesiastical matters. This man was unreasonably devoted to the voluptuous life, and his incontinence was always ready to become more, not being refreshed with the bridle of cleanness and chastity. He purchased himself a mistress and by her unlawfully begat a daughter, whom he, loving with fatherly affection, made to study in early youth. And when she reached marriageable age, he sent her to a matron, who had a man's heart in a woman's breast, and made her refrain from the vice that is characteristic of that age, and tried to give her wholesome information. The girl was therefore carefully looked after and properly taught, and she began to be wiser than her teacher, and to show the form and example of virginal purity to all those living around her. Certainly, when this virgin was desired by many wooers, she could not be deceived by any wiles or subtle suggestion, for she would never endure the flattering talk of bawdys or lecherous persons, but she, taming the carnal impulses of voluptuousness, vigorously trod them under foot, always remaining unspotted. The enemy of mankind envied this cleanness, trying to subvert in her the purpose of this cleanness. And new subtleties of grief he counseled and sought. And unheard of deceits he ordained and found against the virgin, whom, suffering the righteousness of God, not only do we marvel at but we also fear. For though God inwardly understands how it might be done, we think this is a monstrous thing. Therefore this subtle serpent transformed himself into the likeness of a comely young man. As though he were a gentleman of the king's blood, more vilified with precious ornaments than made handsome by his beauty, he suddenly slid into the chamber where this girl was sitting alone, and when she saw him she was seized with a sudden fright. And she was astonished, and marveled at where he came from and how he entered, and beheld the beauty and the shining of his countenance with a simple but not with a prudent eye. The enemy felt the fear of the lightheaded woman; therefore he drew nearer and sat down by her side. And he cast hard venom out of a mortal breast. First with sweet venomous words he comforted the frightened girl, and then mixed prayers and promises so that she would give assent to immoral relations. And, meanwhile, he added his tricks of subtle deceit, so that the girl was not so afraid and spoke boldly. And she answered thus: "It is not the act of a prudent reasonable man to conceive such a desire in his heart, to speak so shamelessly and to act so unseemly. First, it would be befitting to prove to my parents the nobility of your birth, and then, with the consent of us both, to be legally married. And when that has been contracted and strengthened with the solemn authority of the church hallowing it, we shall then pay the debt of the body, each of us to the other, not because of burning lust but only to have children. You continually plan the contrary way, you make no mention of God, neither of man, you only plan for the fury and madness of your voluptuous soul. And so, putting behind you the shame of God and man, you beg me to consent to your malign voluptuousness. First, indeed, tell me who and what you are, and who admitted you here,

and use better judgment in other things from now on, and be better advised." To this the enemy answered: "Why do you concern yourself with reason, when we are only talking together for our pleasure? Here pity is complaining, religion is superstition. When our plan and purpose is the destruction of chastity, no law or custom is to be consulted, but only the reward of uncleanness is to be awaited. So to ask who I am and how I came here is not worth while, only join your affections to my petition, and after you promise the effect shall follow swiftly and hastily." After this, and more of the same, when they had talked together, the virgin's nurse, coming in, marveled at whom the girl was speaking, for she heard some speaking but saw no one but the girl. When the nurse came, the enemy disappeared, but yet he did not give up his unashamed boldness, whenever he saw the girl alone. Like a wanton, jolly young man he called on the girl; she, with prayer and the sign of the Cross guarding herself, defended herself, so that, in spite of all his tricks and ambushes, she escaped untouched. One day when the girl was alone in her room, this wicked thief appeared, more handsome than ever, with shining countenance. And first he prayed and afterward gave promises, and when this did not gain him anything, he started to try violence. The virgin, having had previous knowledge of his boldness, filled the house with great cries. Meanwhile, when the servants ran to see where the noise was coming from, the wicked enemy went away, and he smote the virgin, saying, "Why will you not consent and receive my gifts? When you fail, my enmity will have a bad effect on you." And soon, when the enemy had gone, the virgin fell down to earth, out of her mind, and her body was tormented with great suffering. And often wallowing, and again turning with unrestrained gesture of her limbs, the sorrow was like death. When they ran to the girl, the servants found her half alive, and filled the house with their complaints. The neighbors were gathered all about and a great crowd of people, because of the novelty of such a happening. And all the people were astonished and horror-stricken. And when the virgin had been tormented a long time, finally foaming at the mouth, after much sighing she was able to breathe a little. And she told what had happened to her, how the evil spirit had appeared, and with what promises he had attempted to force her to consent to uncleanness, and how, confused, he went away and smote her. And after such a grievous stroke, infirmity followed. Scarcely had she stopped talking when she began to be tormented in the same way as before. So when she was thus tormented two or three times every day, and sometimes oftener, by the petition of the virgin herself and the counsel of her parents, she was brought to the church of Saint Bartholomew. She was borne on a litter, and passed before the hospital. The foresaid enemy was there, saying to the virgin, "Where are you being carried? Do you believe that the Apostle will deliver you from my hands? If you do not grant my desire and consent to me, you shall die, vexed and made weary by a longer and harder disease." When she was taken off the litter to be carried into the church, he again appeared to her, saying, "Stand up, girl, stand up!

And refuse to be borne into the church, for I shall give health, and all that is desirable for health at your will I shall cause to flow into your hand." And the girl did not reply to this but trusted in God, and lifting up her hands to heaven, she besought the mercy of God. Therefore, this wicked enemy, seeing himself thus deluded and scorned, with sharper prickings waxed mad against the virgin and smote her with more grievous suffering than usual. The canons of the church who were there saw this, and with devout prayers besought the Apostle that with his customary pity he would succor the suffering virgin. Our Lord graciously heard his servants who were praying, asking for what was right, and by the merits of the holy Apostle delivered the virgin from the fiend. And so delivered, and fully restored to health, the girl was then taken to her parents who rejoicing in God, spoke everywhere of the might of the Apostle, praising and blessing God, who hates nothing that he has made, whose judgments are manifold in deep darkness.

BOOK II, CHAPTER 13.

Of a Feverish Man Who Lost His Sight

A certain man of Chilham Castle, who was seized with a severe sickness, spent his unhappy life in sorrow and bitterness of heart. Finally, sorrow was heaped upon sorrow, for when his fever increased, he lost the sight of both eyes. So he groped about, trusting to the steps of others and feeling his way with his staff. And so for some time he sat in darkness. Now for nine months the miserable man never stopped crying and asking, and asking and crying, until God's mercy would hear him. When he came to the church of Saint Bartholomew, he received his sight in both eyes, and for the gift obtained he gave thanks to God, witnessing faithfully, both to learned men and others standing about, the might of Christ's Apostle.

BOOK II, CHAPTER 15.

Of a Certain Dumb Young Man

When a certain young man happened to be lying on the ground, wanting to rest a while, he became dumb through the evil influence of the old enemy; and so a certain young woman, his cousin, led him and brought him, lacking his speech, to the same church. And both of them knelt down before the holy altar, and with grieving hearts besought the help of Saint Bartholomew. And the same day the use of his tongue was restored to him.

BOOK II, CHAPTER 19.

Of a Certain Young Woman

A certain young woman was acquainted with many people in the city of London, and was more generally known as a hired servant accustomed to serve many people. One day this woman, deceived by a bawd from the profit of her just labor to the voluptuousness of unclean sin, and willfully succumbing to the robber of her cleanness, she was robbed of incomparable treasure. It was not long before the reward of sin followed, and when she

made her whole body and flesh subject to sin, she completely lost her mind, and that member which was the armour of wickedness turned into the armour of madness. The heart, the principal organ of man, which was joined to the fiend was darkened by this oppression. And that which in sin God would not regard, in pain neither God nor he understood. The eyes were sometimes rolled upwards, sometimes frighteningly rolled about, she tore her clothes with her hands, her tongue was unbridled to blasphemy, and ribaldry; and when her madness became worse, she was restrained in straight bonds. She easily broke these bonds with the power of her madness and others were added. Thus she was brought to the hospital of the said church, and in a short time the contraction of all her members followed so that she could not use them in any way freely. And under such miserable circumstances the mercy of the blessed Apostle was summoned, which mercifully relieved the mad woman of her insanity, and completely cured, she went home to her own family.

BOOK II, CHAPTER 20.

Of a Woman Seized with the Palsy

Another woman was diseased with the palsy, and when the grievous sickness became worse, she suffered spasms in all her members. She lived on the Thames River. And she was brought to the same house; and the same woman, by the might of her Apostle, was cured of her sickness after a little while, and rejoicing, returned to her house, took a husband and brought forth children.

BOOK II, CHAPTER 21.

A Miracle of a Girl

A certain girl, servant of a Londoner, was brought to the foresaid hospital. She had one foot which she could not stretch out. She had been in bed a long time on account of her long sickness, or because the sinews of her thighs were crippled. One night the blessed Apostle appeared to her in her sleep, and commanded her to stretch her feet out. At the commandment of the Apostle she easily stretched her foot out. And when she arose in the morning one foot was healed and at the time of evensong she had the free use of both. Those who were present marveled and asked her what happened to her that night, and she told what she saw and confessed the author of her health, praising the Apostle of Christ and giving thanks to God.

BOOK II, CHAPTER 22.

Also a Miracle of a Certain Woman

The year of the incarnation of our Lord 1169, of the reign of King Richard the Second the sixteenth (i.e., the fifteenth year of the reign of Henry II) in the solemnity of the Apostle Saint Bartholomew, many tokens of might were showed in his holy Church. A certain woman suffering with a grievous sickness was borne on a horse litter to that holy temple. And

behold, during the vigil of the same Apostle about the hour of compline, she became better. And she got back a little of her strength that she had lost, and furthermore, soon afterward her health was fully restored. So, rejoicing and whole, she arose from her litter and went to kiss the holy altar, offering herself as an acceptable sacrifice to God, giving grace and thanks. The Godly miracle was soon made known. And those of that church and many people gave devout praise and thanks to God and to his blessed Apostle.

BOOK II, CHAPTER 23.

Of a Child That Received His Sight

In the same solemnity, a certain child who had lost his sight, received it again through the intercession of the holy Apostle. And when with others he saw the mercy of God and the power of the blessed Apostle, Saint Bartholomew, he greatly magnified and spoke, because of the showing of the heavenly token.

BOOK II, CHAPTER 24.

Of a Woman Who Had Lost the Use of One Side

In the same church during the foresaid solemnity, was brought a woman, who, one time, when she was sleeping on her side was smitten with palsy and lost the use of that side. And she remained a long time without the use of her limbs. This woman was healed on the night of the holy solemnity, and with joy and whole, she went home to her own family.

BOOK II, CHAPTER 25.

Of a Little Child That Was Mad

After the octave of the same feast, a certain little child was brought by his mother to that church, who from the Feast of St. Laurence the Martyr had lost all feeling of reason. And for his wounds (woodness) labored sore. He was grievous and intolerable to his mother and she said he was borne to many places of Saints before that time but never cured. And when his mother had brought him to the foresaid place and there had fulfilled holy watch and prayer, she desired of the most meek of Christ's Apostles the effects of her petitions and so opened to herself gladness and to the child health and every Sunday following showed him to the people.

These are records from an institution continuously serving the public since 1123, with the possible exception of a few years when it was closed by Henry VIII, only to be promptly reopened by popular demand and refounded on a secular basis. The medical school was formally recognized in 1791 and has contributed such great teachers as William Harvey, John Abernathy, David Pitcairn, Percival Pott, and Sir James Paget.

The quadrangle of the Hospital, most of which still stands today,

was designed by James Gibbs and built in the late 18th century. Gibbs was the architect of St. Martin's-in-the-Fields and St. Mary-le-Strand in London.

The Hospital and Priory were established simultaneously. The early patients often came from considerable distances, usually on foot, sometimes on muleback, rarely on horseback, occasionally by barge on the Thames, along the Fleet and landing at the bottom of Hosier's Lane, a stone's throw from the Hospital.

Practically nothing is known of the system of treatment during the first 400 years of the Hospital's service. In 1387 John Mirfield, a member of the hospital community, wrote a remarkable document: *Breviarium Bartholomei* (2). This is the first known writing of a strictly medical nature associated with any English hospital. In the preface he says:

> Let not, Dearest Brother, your mind be troubled by any question as to the authority of the compiler or writer, nor who he is; but study more attentively what he has written.

Saint Bartholomew's Hospital has been famous for its high standard of nursing care; more extensive historical material can be found in several excellent source books (5), including a recent edition of selected pieces from St. Bartholomew's Hospital Journal entitled *Round the Fountain* (9).

Summary

1. Twenty-two case histories are selected from *The Book of the Foundation of St. Bartholomew's Hospital,* which appear to represent neurologic or psychiatric problems and cure.

2. Possible diagnoses are offered on the basis of these reports which probably represent the earliest clinical hospital records in the English language.

3. A brief sketch of the history of the foundation of the Hospital, of its founder, and of Medieval London is presented as background to understanding the Hospital and its patients.

4. The purpose of the paper is to bring to light and translate these interesting clinical records written over 800 years ago.

NOTES

1. His legs were clawed to the back of his thighs and he could not walk. His hands turned backward and he could not work, or do anything with them. The extremities of his fingers were so rigorously contracted in the sinews that he could scarcely put meat to his mouth. He was sustained there for awhile on the alms of the same Church and desired health came to him by certain increments. First, with hands though they were crooked did he make small works as distaffs and weights, etc., followed with greater

works—hewed wood with axe and squared timber with axe. Then he used his craft as carpenter taught him in childhood.

2. The manuscript obtained its designation Vespasian B-IX from this circumstance.

3. The 15th century English translation as it appears in *The Book of the Foundation* begins as follows:

"For Asmooche/that the meritory and notable operacyons/of famose/gŏode; and deuoute faders yn God/sholde be remembred for Instruccion of aftry cummers, to theyr consolacioun/and encres of devocion/thys Abbreuyat Tretessel shol compendiously expresse and declare/the wonderful, and of celestial concel, gracious fundacion/of oure hoely placys callyd the Priory of seynt Bartholomew yn Smythfyld, and of the hospital by olde tyme longyng to the same/with other notabiliteis expediently to be knowyne. And most specially/the gloriouse and excellent myraclys wroghte with-yn them/by the Intercessions, suffragys, and meritys of the forsays/benyne, feythfull, and blessid of God Apostyl, Sanct Barhtholomy/yn-to the laude of almyghty God, and agnicioun of his infinite powere" (4).

4. "It seemed to him that he was borne up on high of a certain beast that set him on a high place, and when he from so great a height would bow down his eyes, he beheld a horrible pit, the deepness of the same pit was deeper than any man might obtain to see. Therefore, he, knowing his secret faults, deemed himself about to slide into cruel downcast, yet he for dread trembled and great cries proceeded from his mouth. And there appeared a certain man: 'I am Bartholomew, the apostle of Jesus Christ, that came to succor thee in thy anguish and open to thee the secret mysteries of Heaven. Know me by the commandments of the High Trinity and the common favor of the Celestial Court and counsel to have chosen a place in the suburbs of London at Smithfield, where in my name thou shalt found a church, and it shall be to the honour of God. There shall be a tabernacle of the Lamb, the Temple of the Holy Ghost. This spiritual house the Almighty God shall inhabit and hallow it, and glorify it. And his eyes shall open, his ears listen, on this house night and day, that the asker in it shall receive and the seeker shall find, and the ringer and the knocker shall enter. Wherefore do thou boldly, neither the cost of the building doubt thee not' " (7).

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THE LONG TERM EVALUATION OF PREFRONTAL LOBOTOMY IN CHRONIC PSYCHOTICS*

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While there has been a rapidly growing bibliography on the subject of the prefrontal lobotomy, there has been no study which has assessed adequately the long term effects of this procedure on chronic psychotics. Most reports have been made within a two year postoperative period and consequently do not give an accurate account of the full effects which are observable only over a much longer period of time.

Because of the short time lapse spuriously low convulsion rates have been reported in many cases. A survey of the literature reveals rates ranging from 2 per cent (3) to 12.5 per cent (5). Freeman and Watts (2) point out that most patients develop convulsions within a five year period after surgery or not at all. The present investigation of 46 chronic psychotics subjected to lobotomy in 1941 and 1942 at this hospital disclosed that for the 6 patients who developed convulsions (13 per cent), an average period of 3.3 years elapsed after surgery before the initial seizure. Two of the 6 had their first attack between five and six years postoperatively. Often, too, a recovery or a marked improvement extending over a number of years is noted following lobotomy but often this remission proves to be temporary and the patient lapses to a less auspicious state. A third point favoring the long term study is the fact that some patients show a marked improvement only after a long latency period, during which time there was thought to be little change from the preoperative level. An additional number of operatees continue to improve from year to year, as in the case of one of our subjects who was discharged from the hospital after achieving an adjustment peak eight years postoperatively.

In addition to the above considerations recognition of the incomplete perspective afforded by a short term study of such factors as age,

* This study was conducted by the Willmar State Hospital and the Minnesota Bureau for Psychological Services under a research grant by the Minnesota Division of Public Institutions.

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duration of psychosis, and preoperative diagnosis with regard to degree of subsequent recovery led us to the belief that the long term evaluation would prove more fruitful. The present investigation then was undertaken (a) to evaluate the prefrontal lobotomy with regard to subsequent social adjustment eight to nine years after surgery; (b) to investigate factors which affect the degree of social recovery attained; (c) to discover by the use of an adequate experimental control group any permanent measurable psychologic decrement resulting from the lobotomy. A preliminary report based on these cases was presented by Petersen and Buchstein (4). The Freeman and Watts surgical technique was employed in all cases. There were no surgical mortalities or serious complications.

Method

It was possible to match individually 25 operatees with 25 control patients at the preoperative level on the basis of nine criteria. These were race, sex, age, preoperative diagnosis, period of institutionalization, age at time of institutionalization, years of formal education, marital status, and occupational level. All members of both groups were white and each group consisted of 10 males and 15 females (Table I). Each group contained 19 diagnosed schizophrenics and 6 patients with affective psychoses. During the matching procedure the various types of schizophrenia and manic-depressive psychoses were considered to obtain pairs as closely matched as possible; only then were the reaction types grouped to form the two major divisions. The matching at the preoperative level took into account the severity of the individual psychosis judged by the social behavior and the impairment of affect reported at that time. It should be mentioned that the control group was

TABLE I.—Comparison of Means of Background Variables in the Matched Groups

Groups	*No. in Group*	*Age at Operation*	*Age at Time of Institut.*	*Yrs. of Institut. Prior to Operation*	*Years Formal Schooling*
Operatees	25	42.5	29.2	13.3	9.4
Controls	25	41.6	29.4	12.2	8.5

composed largely of individuals for whom lobotomy permission had been refused by the relatives. The members of both groups had been maintained at the same hospital from the preoperative period to the time of the study under the same conditions since there had been no special follow-up or re-educative programs for lobotomized patients.

It was decided that each individual, operatee and control, would be

compared directly with his own preoperative period behavioral status. Secondly, the operatee group as a whole would be compared directly with the control group to determine the relative efficacy of the treatment. Since only 25 operatees could be matched with controls there remained 18 additional unmatched operatees (7 of whom are living outside the hospital) to be considered and evaluated. (Two of the original 46 operatees had died in the intervening period and one was not included in the study because of active tuberculosis.) When the unmatched group is involved with the matched operatees the whole group will be designated as "all operatees."

The basis for the preoperative period rating was the records, notes, and summaries maintained by the psychiatrists, attendants, and nurse supervisors on each patient, operatee and control, for the two or three year period prior to the date of surgery. A picture of the present behavioral status of each patient was derived from the distinctly separate reports of the psychiatrist, psychologist, nurse supervisors, and the nurse or attendant in charge of the cottage in which each of the patients lived. In addition, charts which listed various aspects of behavior were kept for two months on each patient by the charge nurse of each cottage in conjunction with the attendants who were with the patient constantly from day to day. Everyone involved in keeping these charts was carefully instructed in their use and frequent discussions were held concerning the terms employed. These charts were comprised of concrete, objective descriptions of the patient's day to day behavior. The 7 patients living at home were seen by both the psychologist and the social worker and were rated on the behavior charts as well. Thus an integrated, meaningful picture of the patient's current behavioral status was gained from analyzing each of these reports from the many separate sources. By comparing this with the preoperative status it was possible to determine in accordance with certain criteria whether the patient had become worse, remained the same, or showed slight, moderate, or marked improvement, or complete recovery.

The rating scale was designed from a social standpoint, that is, with regard to the extent that the patient had regained his effectiveness in living with and dealing with other individuals. Thus a patient who had been grossly delusional, suicidal, and a constant nursing problem at the preoperative period and who now was no longer suicidal or a nursing problem, although still retaining traces of his delusions without actively reacting to them, would be considered improved despite the fact that he was still incapable of living outside of the hospital setting. The rating of "complete recovery" was accorded when the patient was enabled to leave the institution, take up his former occupation and func-

tion in society without the barest outlines of his original psychosis. When the patient had become more vegetative since the preoperative period, regressing still further into apathy, or when he had become a more severe ward problem from the nursing standpoint and remained so, he was rated "worse."

Tests for the psychologic work-up were selected which might serve to differentiate between the lobotomized and the control groups. These tests included the Wechsler-Bellevue Intelligence Scale, Form II, the Minnesota Multiphasic Personality Inventory, the Porteus Mazes for which both quantitative and qualitative scoring techniques were used, and the Benton Visual Retention Test.

Results

Table II shows the distribution of each group on the rating scale, the ratings running from 1 (worse) to 6 (complete recovery). Both matched operatees (N = 25) and all operatees (N = 43) had a mean rating score of 4 or "moderate improvement"; the controls had a mean rating score of 2 or "same condition." This difference was statistically significant at the 1 per cent level of probability. No control showed a complete recovery and only one showed marked improvement (rating 5). A striking difference in favor of the operatees with regard to ratings 5 and 6 ("marked improvement" and "complete recovery") should be noted, for while only 4 per cent of the controls attained this degree of recovery, 47 per cent of all operatees or 44 per cent of matched operatees reached this level. Also, only 6.7 per cent of all operatees or 8 per cent of matched operatees remained the same or became worse in contrast to 88 per cent of the control patients who remained the same or became worse.

TABLE II.—Distribution of Members of the Three Groups on the Social Recovery Scale Without Regard to Diagnosis

Groups	1 (*Worse*)	2 (*Same*)	3 (*Slight*)	4 (*Moderate*)	5 (*Marked*)	6 (*Complete*)
All operatees $N = 43$	1	2	12	8	13	7
Matched operatees $N = 25$	1	1	7	5	10	1
Controls $N = 25$	5	17	2	0	1	0

Comparison of the operatee and control groups on the basis of diagnosis (schizophrenia and affective psychoses) showed a statistically significant difference in degree of social recovery for both diagnoses favor-

ing the operatee group. Table III shows the mean of each group on the rating scale by diagnostic category.

TABLE III.—Comparison of the Mean of Each Group by Diagnosis on the Social Recovery Scale

	ALL OPERATEES*		MATCHED OPERATEES		CONTROLS	
	Schiz.	*Affect. Psychoses*	*Schiz.*	*Affect. Psychoses*	*Schiz.*	*Affect. Psychoses*
No. of cases	33	9	19	6	19	6
Mean on rating scale	4.0	4.7	3.9	4.3	1.8	2.5

*One psychoneurotic case is not considered here as this diagnosis is not represented in the other two groups.

A number of investigators have suggested that the affective psychoses show a higher recovery rate after lobotomy than does schizophrenia, but the literature contains no statistical evaluation to support the contention that such patients show a greater degree of *improvement* per individual than do schizophrenics. A comparison made within our operatee group between the two major diagnostic groups revealed no significant difference in the degree of improvement attained. That is, although there was a higher percentage of the affective disorders than of the schizophrenics showing marked improvement or complete recovery after lobotomy, when the average degree of improvement for the patients of each diagnostic group was considered, the operation proved to be as valuable for the schizophrenics as for the affective disorders.

Within the control group, however, the affective disorder group showed a significantly greater degree of improvement with the passage of time than did the schizophrenic group which, on the contrary, tended to become worse through the years. This finding is an agreement with the observations of most clinicians with regard to the poor prognosis of the schizophrenic patient not accorded treatment.

The attempt to discover factors which influenced the degree of improvement manifested showed that there was no relationship between sex and degree of improvement. Secondly, there was no significant difference in degree of improvement between operatees who developed convulsive seizures and those who did not. It was found that the length of time the patient had been institutionalized prior to operation correlated negatively with the degree of improvement shown ($r = -.61$, significant at the 1 per cent level). To verify this latter finding the mean institutionalization period prior to surgery was computed for the dis-

charged operatees (5.4 years) and for those operatees still in the hospital (15.2 years). This difference in means (9.8 years) was statistically significant at the 1 per cent level. The age at time of operation showed a positive correlation with degree of social improvement ($r = +.66$, significant at the 1 per cent level). These findings appear to indicate that the longer the patient has been hospitalized, that is, the longer the duration of psychosis prior to operation, the less the degree of permanent improvement following surgery, and the younger the patient at the time of operation, the less marked his degree of improvement. This latter finding probably results from the fact that the very young patients were schizophrenics of the hebephrenic type with an early age of onset of psychosis who at the time of operation showed a minimal degree of what Freeman and Watts describe as "psychic tension" (1).

Of the 20 lobotomized patients in the two top adjustment levels on the social improvement scale (ratings 5 and 6) 25 per cent reached their peak of adjustment within one year after operation, and 60 per cent within five years, but an additional 40 per cent continued to improve up to eight years after surgery. The individuals showing the greatest degree of improvement on the improvement scale (ratings 5 and 6) reached that peak of adjustment after a mean time interval of 4.2 years; the median time interval was five years. On the other hand, a number of lobotomized patients reached a high peak of social adjustment over a period of years and then commenced to slip back again, though never quite to their individual preoperative levels. Of the 20 individuals referred to above in the two top adjustment levels, 5 have showed signs of regressing to a lower adjustment level within the last few years. Two of these 5 were patients for whom complete recoveries had been reported in a report (4) published within a year after surgery. This regression cannot be attributed solely to advancing age inasmuch as 2 of the 5 are less than 40 years of age at the present time. This is lower than the mean age of all the operatees at the time of surgery (44 years). Why this regression in behavior from a high postoperative adjustment level should occur in some individuals and not in others is not known, but the recognition of this fact is important.

The psychologic data were exhaustively analyzed from a statistical viewpoint with essentially negative results in all but two instances. The Picture Arrangement subtest of the Wechsler and the Porteus Mazes (quantitative scoring) showed differences in mean scores statistically significant at the 1 per cent level, in each case favoring the control group. The proponents of these two tests maintain that they measure the subject's ability to size up and comprehend a total situation (8) and his ability to look ahead planfully with regard to probable conse-

quences (7). If such is the case, the present findings would appear to contradict recent short term studies (6, 9) which concluded that the postoperative drop in test performance was merely a temporary manifestation eliminated within a year's time. Instead, it would appear that there is a permanent measurable decrement in these particular areas of intellectual ability evidenced some eight to nine years postoperatively.

Summary

Forty-six lobotomized subjects were studied by the control method eight and one-half years after surgery.

1. It was found that one-third of the patients developing convulsions had their initial seizure between five and six years postoperatively.

2. Of the 20 operatees showing the greatest degree of improvement 25 per cent reached their peak of adjustment within one year after surgery and 60 per cent within five years, but an additional 40 per cent continued to improve up to eight years postoperatively.

3. A regression in behavior was observed in some cases, apparently independent of age, where a high peak of adjustment had been maintained for a number of years after lobotomy.

4. There was no relationship found between degree of improvement and sex, nor between degree of improvement and the occurrence or absence of convulsions.

5. There was a statistically significant positive correlation between degree of improvement and age at time of operation, and a significant negative correlation between degree of improvement and length of time of institutionalization prior to surgery. These findings were thought to emphasize the importance of psychic tension in the selection of patients for lobotomy since the individuals showing the least degree of improvement were those patients with an early age of onset of psychosis and the patients who had been hospitalized for the longest periods of time. In both instances, preoperative psychic tension would be at a minimum.

6. While only 4 per cent of the control subjects (no surgery) showed marked improvement or complete recovery and 88 per cent of the controls remained the same or became worse, 44 per cent of the matched operatees reached the top adjustment levels and only 8 per cent remained the same or became worse. Subdivision of the two groups into reaction types (schizophrenia and affective pschosis) showed a much greater degree of improvement of the operatees for both diagnostic groupings.

7. There was no statistically significant difference in the mean degree

of improvement between the two main diagnostic categories of the operatee group.

8. Within the control group there was found to be a statistically significant difference in degree of improvement favoring the affective psychosis group. While the affective disorder group had showed a certain degree of improvement without treatment, the schizophrenic group had become somewhat worse.

9. There was a statistically significant difference favoring the control group on the Picture Arrangement test of the Wechsler and on the Porteus Mazes. This would suggest a permanent decrease in ability after lobotomy in these particular areas of test performance which are believed to relate to the ability to look ahead planfully and to size up total aspects of social situations.

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ON THE GLUCOSE TOLERANCE TEST, AND THE EFFECT ON THE FORMED ELEMENTS OF THE BLOOD OF GLUCOSE AND EPINEPHRINE IN SCHIZOPHRENIA*

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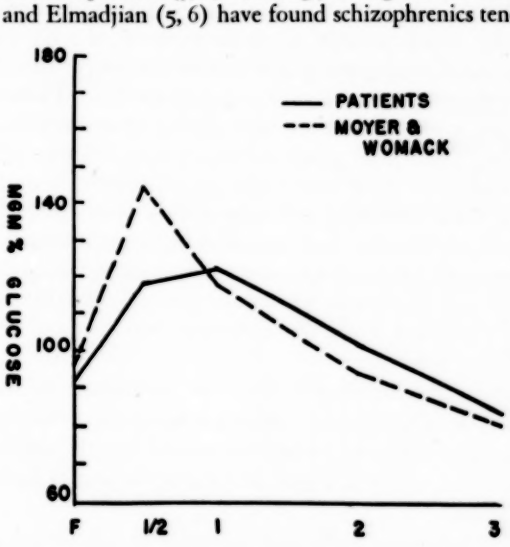
INTRODUCTION

Several groups of workers have demonstrated alterations in glucose tolerance in schizophrenia (7, 8, 10, 12, 13.) Using the Exton-Rose Test, Freeman and Elmadjian (5, 6) have found schizophrenics tend to show



COMPARING MEAN OF 24 ORAL G·T·T·S ON SCHIZOPHRENICS WITH THE NORMS MOYER AND WOMACK·

FIG. 1

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a delayed rise of the blood sugar to peak value. Parallel lymphocyte counts revealed a failure of this blood element to decrease in a normal fashion in response to glucose. On this basis, and in line with other work by their group (8), the authors conclude that the alteration in glucose uptake is secondary to adrenal dysfunction. The present study was undertaken after the analysis of 24 one-dose glucose tolerance tests done in the course of working up schizophrenic patients for shock treatment revealed essentially the same pattern as that noted by the Worcester workers (Fig. 1). Our object has been to define more closely the mechanism of this phenomenon as well as its relation to adrenocortical function.

Experimental Procedure

Ten patients suffering with schizophrenia and 10 nonschizophrenic control individuals were used in these studies. The patients ranged in age from 20 to 44; 5 were white and 5 colored. Five were men and 5 women. While 8 of the 10 patients were admitted to our service as acutely sick, it was possible to obtain evidence of schizophrenic behavior for many years in the past of at least 9 of the patients. No special effort was made to control diet in these groups (v.i.). However, at the time of our study all patients were eating spontaneously a regular hospital diet. The control group included 5 men and 5 women ranging in age from 21 to 32. It was made up of students, technicians and physicians. Each individual was subjected to a test battery including the Exton-Rose, one-dose, and intravenous glucose tolerance tests, and the Thorne test. All blood specimens were collected in oxalated tubes and precipitates were made within one hour of collection of blood in all cases. The usual Folin-Wu technique was used in determining blood-reducing substances.

Dosage for the intravenous tests was determined on the basis of the subject's weight. Glucose, 0.5 Gm. per kilogram of body weight dissolved in 300 cc. of normal saline, was infused into the antecubital vein over a period of 20 to 30 minutes. Blood samples were collected at ½, 1, 2, and 3 hours.

The oral tests were performed according to established techniques (9). In the Exton-Rose Test 50 Gm. of glucose were administered after the fasting blood specimen was collected and again after the half-hour specimen. Additional blood specimens were collected at one and two hours. In the one-dose test 100 Gm. of glucose were administered following the drawing of a fasting blood specimen and additional blood samples were taken at one half, one, two, and three hours after the glucose injection.

The Thorne test was performed after the method described by Thorne and Forsham (14). Following the drawing of a fasting blood specimen 25 mg. of epinephrine were administered subcutaneously. The patient was allowed to eat and go about limited activities until a second blood specimen was taken four hours later.

In the course of the glucose tolerance tests, lymphocyte and eosinophil counts were done on each blood specimen. The eosinophil counts were made after the method described by Roche et al. (11). Total lymphocytes were obtained by determining the percentage of lymphocytes on stained specimens and calculating from the total white count.

All determinations were run in duplicate.

Results

The Glucose Tolerance Test. Our findings are summarized in Fig. 2 and Table I. We confirm for the Exton-Rose test a tendency for schizophrenic subjects as a group to show a more prolonged rising phase and a failure to reach as high a peak as that attained by the

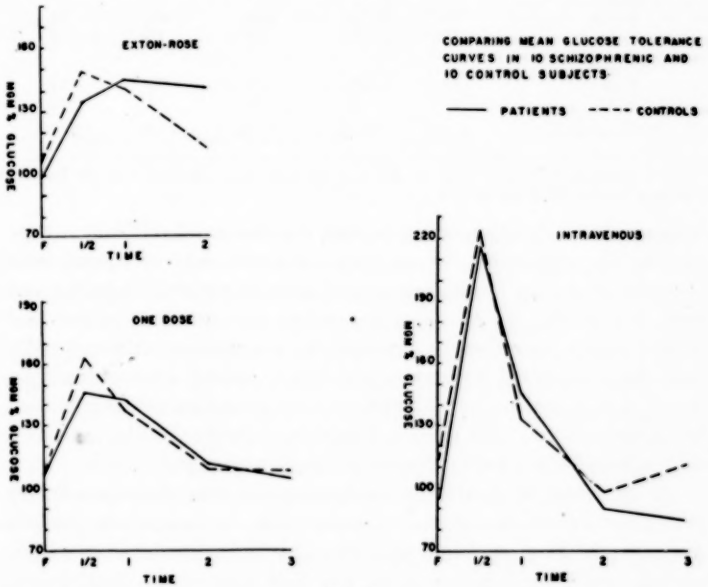

Fig. 2

controls. In the one-dose oral test, the patients' curve reached its maximum value at one half hour. This, however, was one S.D. below the peak control value, and the level remained constant through the one-

TABLE I.—Comparing Alterations in Blood-Reducing Substances in the Course of Glucose Tolerance Tests in 10 Schizophrenic and 10 Normal Individuals

	F	*1/2*	*1*	*2*	*3*
A. Exton-Rose Test					
Patients					
Mean	99	135	146	142	
S. D.	19	14	33	47	
Controls					
Mean	106	149	142	113	
S. D.	12	29	22	21	
Critical Ratio*	1.20	1.20	0.23	1.50	
B. One Dose Test					
Patients					
Mean	107	146	142	111	105
S. D.	16	19	32	31	24
Controls					
Mean	107	163	137	109	100
S. D.	12	27	24	24	21
Critical Ratio	0	1.35	0.42	0.13	0.60
C. Intravenous Test					
Patients					
Mean	96	216	146	89	84
S. D.	10	65	30	18	8
Controls					
Mean	113	224	132	98	111
S. D.	11	37	33	9	12
Critical Ratio	3.30	0.29	1.00	1.40	4.70

*A significant critical ratio in this and all following tables to the .05 level is 2.26 and to the .01 level is 3.25.

hour specimen. It is important to note that we are describing average curves. The differences we note are consistent only in having been observed as average findings in several series of patients, including our own. Statistically, no corresponding points on our mean patient and control curves proved to be separated by a significant difference. We have then confirmed a trend or a tendency among schizophrenic patients, a phenomenon which, since it is by no means universally seen in individuals with this disease, should be considered to be associated with schizophrenia rather than of etiologic importance.

In an effort to clarify the mechanism for this phenomenon, we performed intravenous glucose tolerance tests on each of our patients and controls. Here we found no appreciable difference between schizophrenic and control curves at the one half, one, or two hour points. From this we conclude that the delayed rise in blood sugar following the oral ingestion of glucose, as seen in schizophrenia, is due to a failure in absorption from the gut. Further analysis of the nature of this disturbance is in progress.

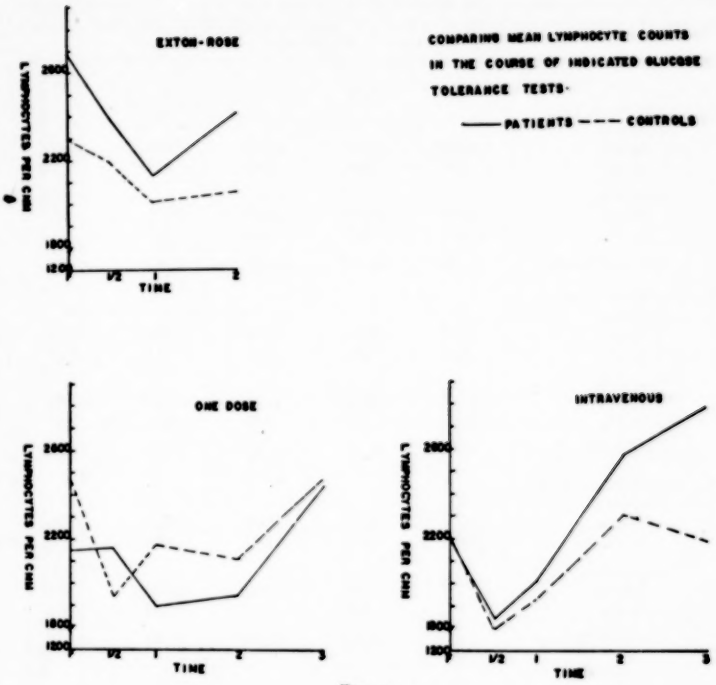

FIG. 3

Analysis of the intravenous test revealed, in addition, a significant difference in blood sugar values at the three-hour point. Unlike the control group, whose mean blood sugar reached a low point at two hours and then rose, the schizophrenic patients' continued to fall so that at three hours the critical ratio of the difference between the patient and control values is 4.7. The meaning of this finding is as yet not clear.

Changes in Formed Elements of the Blood. With regard to lymphocytes (Fig. 3, Table II) we observed a drop in total count following ingestion of glucose by whatever route. Statistical analysis fails to show any difference between patient and control curves which could not be attributed to chance.

The eosinophil (Fig. 4, Table III) response likewise, with the exception of one point, seemed in all three glucose tolerance tests to behave similarly for both groups. The only point of significant difference is at one hour in the oral test. Here a critical ratio of 3.7 obtains between patient and control values. What the meaning of this sporadically occurring, significant difference might be is by no means clear to

TABLE II.—Comparing the Response of Lymphocytes to Ingested Glucose in the Course of Glucose Tolerance Tests in 10 Schizophrenic and 10 Normal Individuals

	F	*1/2*	*1*	*2*	*3*
A. Exton-Rose Test					
Patients					
Mean	2680	2385	2131	2406	
S. D.	836	606	272	524	
Controls					
Mean	2294	2187	2003	2055	
S. D.	524	490	360	519	
Critical Ratio	1.18	0.73	0.67	1.49	
B. One Dose Test					
Patients					
Mean	2147	2156	1896	1939	2426
S. D.	803	885	541	555	715
Controls					
Mean	2465	1950	2175	2109	2386
S. D.	596	389	549	421	263
Critical Ratio	0.90	0.55	1.83	0.80	0.16
C. Intravenous Test					
Patients					
Mean	2197	1841	2007	2562	2736
S. D.	565	476	684	566	469
Controls					
Mean	2217	1791	1932	2299	2183
S. D.	952	420	475	589	685
Critical R atio	0.05	0.20	0.25	0.83	1.74

us. It is of interest, however, in terms of the reported hypothesis (8) that the eosinophil drop is mediated through adrenal cortex and that the adrenal cortices of schizophrenics do not respond to stress as do normals, that the drop for the schizophrenics is significantly more marked at this point than is that for the normal control.

The Thorne Test. It was observed that both schizophrenics and normals responded with a significant drop in total eosinophil count (Fig. 5, Table IV). The drop in the control group is somewhat more marked than in the patient group. The critical ratio between the groups, however, is not significant.

Discussion

The possible mechanisms for the observed glucose tolerance curves in schizophrenia are numerous. Hypotheses have been advanced relating to all the various levels of function involved in the utilization of glucose. Some workers such as Shattock (12), Greville (7), Thomas et al. (13), and Proctor et al. (10) have been satisfied to attribute the

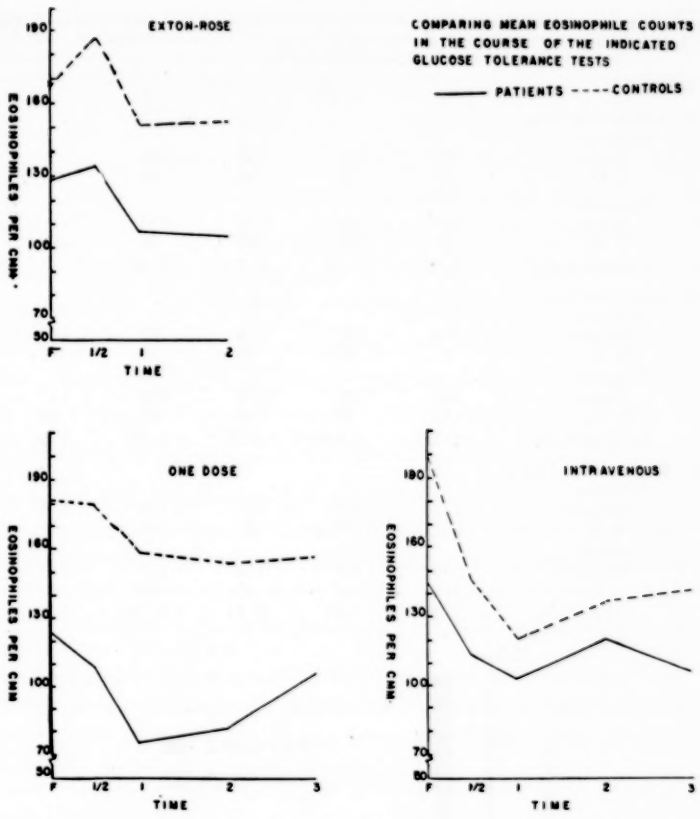

FIG. 4

change to an alteration in the mechanism for absorption without committing themselves further as to the basis for this alteration. Freeman and Elmadjian (6) suggest that glucose trips a mechanism involving the pituitary-adrenal cortical relationship. The latter then mediates the breakdown of protein. It is their feeling that emotional disturbances accelerate this mechanism and account for sustained hyperglycemia in schizophrenia. On the other hand, they feel that carbohydrate does not stimulate the adrenal cortex as adequately in schizophrenics as in non-schizophrenic individuals. These two conclusions seem to be in direct contradiction with one another.

Braceland et al. (3) have explained hypoglycemia in the Exton-Rose glucose tolerance test on the basis of a delayed action of insulin. These

TABLE III.—Comparing the Response of Eosinophils to Ingested Glucose in the Course of Glucose Tolerance Tests in 10 Schizophrenic and 10 Normal Individuals

	F	*1/2*	*1*	*2*	*3*
A. Exton-Rose Test					
Patients					
Mean	128	134	108	106	
S. D.	59	51	43	51	
Controls					
Mean	167	185	152	153	
S. D.	88	111	63	58	
Critical Ratio	0.90	1.20	1.80	1.50	
B. One Dose Test					
Patients					
Mean	124	109	76	82	107
S. D.	47	47	26	24	44
Controls					
Mean	186	180	158	154	157
S. D.	114	98	60	92	88
Critical Ratio	1.38	2.10	3.73	1.89	1.60
C. Intravenous Test					
Patients					
Mean	145	113	103	122	108
S. D.	51	58	58	44	37
Controls					
Mean	199	148	124	137	143
S. D.	118	87	45	63	60
Critical Ratio	1.46	1.00	0.84	0.50	1.70

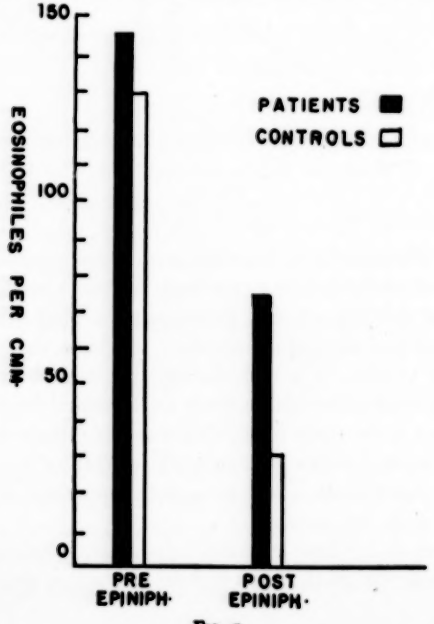

Fig. 5

TABLE IV.—Comparing the Thorne Tests in 10 Schizophrenic and 10 Normal Individuals

Pre-epinephrine	
Patients	
Mean	146
S. D.	52
Controls	
Mean	130
S. D.	61
Critical Ratio	0.59
Post-epinephrine	
Patients	
Mean	75
S. D.	37
Controls	
Mean	45
S. D.	26
Critical Ratio	1.76

workers feel that there is an anti-insulin factor in the blood of schizophrenics which prevents the normal deposition of sugar. As they themselves point out, however, there is no fasting hyperglycemia in schizophrenics such as one might expect in the presence of insulin resistance.

The importance of variations in affective state as a modifier of carbohydrate metabolism has been emphasized by others. Diethelm (4), for example, found a marked variation in the tolerance curve with changes in affective states. He felt that blood epinephrine concentration might explain the changes. In this connection Proctor (10) found a significant alteration in oral glucose tolerance after electric shock therapy and considered this change to be related to clinicial improvement.

With no further clarification Balser and Pacella (1) report flat oral and normal intravenous glucose tolerance in fliers suffering from operational fatigue.

The effect of diet on glucose tolerance has frequently been commented upon. To evaluate the possibility that this may have played a role in our study we performed one dose oral tests on a series of four patients before and after a four-day period during which the regular hospital diet was supplemented by 600 Gm. of carbohydrates. In no case did we observe a change in the pattern of the curve found prior to this regime.

Blotner (2) has made the observation that physical inactivity will result in disturbance of carbohydrate metabolism on the basis of pancreatic insufficiency. To determine the relevance of this observation to our work, we studied a series of 10 clearly nonschizophrenic orthopedic

patients from Charity Hospital and the United States Veterans Administration Hospital in New Orleans hospitalized for periods ranging from two to 46 weeks. While we did find an ascending ("schizophrenic-like") Exton-Rose curve in 5 cases, all 10 patients showed other alterations in glucose tolerance, i.e., a high fasting level (110 to 148 mg. per cent), and a failure of the blood sugar to drop significantly from the peak level after two hours.

Conclusions

Our data support the view that the frequently observed pattern in the glucose tolerance test in schizophrenics is explicable on the basis of relatively delayed absorption. However, we are as yet unable to explain this latter process. We have found no evidence in favor of either the concept of relative adrenal insufficiency or that of relative insulin resistance as an explanation for the altered glucose metabolism. Indeed, the three-hour point on our intravenous curve would seem to contradict the hypothesis that deficiency in insulin elaboration is characteristic of schizophrenia.

It is our feeling that a closer analysis of the mechanism of glucose absorption in schizophrenia is required. It is known that at least five factors are involved in the transportation of glucose from the intestine to the blood. These are:

1. Gastric emptying time.
2. Intestinal motility.
3. Rate of diffusion of glucose across the intestinal wall.
4. The mechanism of phosphorylization, a process which is involved in the absorption of only three sugars, i.e., glucose, fructose, mannose.
5. Endocrine factors including the pituitary-adrenocortical relationship which operates to control blood sodium level and thus the rate of glucose absorption, and also thyroid function.

Which of these factors are involved in the altered absorption pattern we and others have noted, has never been satisfactorily demonstrated. Moreover, it has never been clearly determined how consistent the disturbance in any given individual is from day to day or with changes in other aspects of the individual's status.

Certainly we can conclude from our data that the observed changes are in no way diagnostic of, or directly related to the schizophrenic process. It would seem that a physiologic nuance more frequent in schizophrenics than in nonschizophrenics underlies our findings. Our data at present give no hint as to the nature of this process.

We can further conclude from our observations that, using formed

elements of the blood as an index, neither glucose nor epinephrine serves as a sufficient stress to the adrenals to allow differentiation of schizophrenic from nonschizophrenic individuals on the basis of adrenal responsivity.

Summary

1. The observation of Freeman and Elmadjian as well as others concerning the delayed rise of blood sugar during the oral glucose tolerance test in schizophrenia has been found valid statistically for a group of schizophrenics, but not as a uniform response in all schizophrenic individuals.

2 The intravenous glucose tolerance test shows no features distinguishing schizophrenics from normals at the one half, one or two hour points but does show a significant continuing fall in sugar value at three hours in the schizophrenics group.

3. No concommitant failure of eosinopenia or lymphopenia has been found in schizophrenics as compared to normal individuals.

4. The Thorne test of schizophrenics shows no statistically significant defect in response.

5. The observed statistical deviation from the norm in the glucose tolerance of schizophrenics is apparently related to an alteration in the uptake of sugar from the gut. The mechanism underlying this alteration is as yet not clear.

6. It is concluded that the observed alteration in absorption is associated with schizophrenia, but has no direct relation to the process in the sense of either etiologic significance or a necessary consequence of whatever physiologic processes may prove to be concomitant with the psychologic disturbance.

7. It is further concluded that neither glucose nor epinephrine constitutes a sufficient stress for the differentiation of a schizophrenic from a nonschizophrenic population, where the response of formed blood elements are utilized as an index of adrenal responsivity.

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Paper submitted Sept. 1951.

SOME OBSERVATIONS ON THE BEHAVIOR PATTERN OF ALCOHOLICS ON ANTABUSE THERAPY*

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The use of tetra-ethylthiuram disulfide (antabuse) to reinforce the alcoholic's determination to remain sober has proved successful in a large number of clinics. My observations concern a group of 5 patients who, presenting themselves for treatment for chronic alcoholism, agreed to take the drug and to submit to psychotherapy if that might prove advisable. The circumstances leading to the referral were similar in each case: the patient had just terminated an alcoholic bout and was faced with disruption of his marriage. Their wives were active instruments in arranging for psychiatric care.

The patients ranged in age from 28 to 65 years; there was a history of addiction to alcohol of from 10 to 40 years. Although each patient protested that he was a periodic drinker, and minimized the extent of the drinking entirely, the alcoholism in each case lasted weeks or months at a time, seriously interfering with work efficiency, but not occasioning complete cessation of employment. Attempts to control the habit by joining Alcoholics Anonymous were unsuccessful for the 3 patients who tried this method. During periods of sobriety their behavior lost the hostile, aggressive, accusing, and assaultive character generally manifested when the drinking was continuous. Guilt, remorse, and self-punishment of varying degrees followed severe debauches. Marital discord and conjugal rivalry were present in each instance, and each patient exhibited strong dependency needs.

The method of administration of the drug followed those prescribed by other observers (1). The drug, supplied by Eli Lilly and Company, was given in doses about twice those recommended by the company, before the necessary reaction to alcohol could be obtained. A daily maintenance dose of 2 to 3 grains was required. The alcohol test was tried generally only once for each patient, a week following the initial dose. All test reactions were mild, and were characterized by palpitation, peripheral circulatory vasodilation, hypernea, and a drop in blood pressure. The patients were all apprehensive about the test, but some enjoyed the drink.

Case summaries will illustrate the behavior patterns during the early months of treatment:

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Case Reports

Case 1.—A 34 year old insurance sales executive had been hospitalized for acute alcoholism. He had been drinking excessively at intervals for about 10 years. He requested psychotherapy because he realized that his marital status had a direct bearing on his desire for alcohol. He had been married for the fifth time five months before he presented himself for treatment. He stated that shortly after he marries he becomes discontented with his wife, and begins to drink until she leaves him. Thereupon he stops drinking, becomes contrite, begins again to feel the need for a wife, marries on short notice, and the cycle starts all over again. Each time he commences to drink he sends for his sister, asks her to arrange for the wife to leave, and to manage the home until he sobers up. Usually he is sufficiently sober the morning his wife leaves to drive her to the station, feeling sorry for her; but he resigns himself to the inevitability of the separation. One year earlier, during such a period of drinking and separation, he consulted a psychiatrist because of suicidal impulses. After a month of treatment he was transferred to another city and stopped all therapy. When he brought his *second* wife to live with him again, he felt better for a while, but he drove her off after a few months during a drinking spree, and then he obtained a divorce from the current (fourth) wife. Thereupon he promptly brightened up and began to search for another wife to take care of his home and children.

Following his fifth marriage, the patient worked soberly and energetically at his business, and built it up to a flourishing state. His wife acted as his private secretary, looked after the household, and two children of his second marriage. When he began to drink, two months after the marriage, his wife was able to maintain his business activities through her acumen and knowledge of his affairs. He joined Alcoholics Anonymous but could not follow through; he was hospitalized twice in the succeeding three months, and called for his sister to come up and manage for him.

The patient accepted antabuse and psychotherapy readily, even eagerly. He verbalized profusely, and had a good recollection of his past. But he found it difficult to develop any emotional insight about these events as they related to his present feelings and behavior. At all times he kept himself under rigid control. He was always tense. He feared to become angry because of his past experience with the destructiveness of his anger. He was periodically brought to tears and he manifested many impulsive acts, e.g., leaving town on an hour's notice, firing his salesmen, changing major business plans, buying life insurance. Meanwhile he would toy with the idea of giving up his job, divorcing his wife, or killing himself. Although early in the treatment he spoke only of mild distaste for his wife, with succeeding weeks his hostility to her became more intense and the compulsion to leave her was almost intolerable.

All this time, the patient took the prescribed dose of antabuse regularly, and did not resort to alcohol, though during his periods of agitation he verbalized his wishes to get drunk. In his dreams his desire for drink was

also evident: in one dream he pictured his wife offering him a bottle of liquor, while at the same time she was making advances to his brother. Shortly after commencing treatment an episode occurred where he behaved exactly as he had on a previous occasion while drinking, although this time alcohol did not enter the picture at all. He had impulsively taken his wife and children out of town, and just as impulsively came home alone. He promptly went to bed, pulled up the covers over his head and slept for many hours. He ate little when he was up, neglected his work, drank inordinate quantities of coffee, up to 40 cups a day, and began to make long distance telephone calls to his wife, his mother, his former wife. He ordered new furnishings for the house. He became increasingly tense and agitated, and thought he would have a nervous breakdown. His wife was sent for, whereupon he calmed down immediately, and she took over, rectifying some of the damage he had done. Later when he reconstructed the episode, he said that his feelings and behavior differed in no wise from previous times when he sent his wife away, except that on those occasions he drank heavily.

Shortly thereafter he made a business trip which he prolonged to six weeks. He did not take his family along, as he had promised. On the trip he lived lavishly, spent money freely, while his wife had to struggle with a limited budget. He enjoyed the freedom of premarital days, and determined to divorce his wife as soon as he returned home. He even visited a former wife, promising to take her back later. When on returning home he found that he could not provoke his wife to leave him, he felt trapped and desperate. It was at this point that suicidal impulses appeared. Again he stopped eating, shirked his business duties, drank coffee, slept long hours, demanding that the household remain quiet. He required strong support from the therapist, and expressed his regret at being unable to drink.

During the ensuing four months his behavior continued to respond to fluctuations in mood, and was little altered in the general pattern. He has been a difficult patient in therapy, and has exhibited a striking picture of dependency on and revolt against his therapist. Recently after leaving his wife and suing for a divorce, he became so enraged when she dared file a cross-suit against him, that he attempted to drink, for the first time in ten months. He became quite sick with his fourth drink and gave it up. He has not discontinued the antabuse, and still continues in therapy.

The past history indicates that this man has shown mood swings since early boyhood, and has experienced a series of repetitious episodes of success climaxed by failures brought on by alcoholic excesses. A strong unresolved Oedipal attachment, consequent to his father's suicide while drunk when the patient was 13 years old, seems to be the driving force behind the compulsion to succeed to power and influence, and to establish a home. These he promptly destroys, the former because he does not feel he deserves it, the latter because his wife does not measure up to his ideals. Although he abandoned his first child to her mother and stepfather, he unnecessarily burdened himself with two small sons, for whom he has to provide a home, and a mother substitute. He manifests no affection for these children, but is

rather stern with them; yet he feels obligated to provide better for them than his father had for himself and his siblings. Alcohol had been a sort of castrating instrument which he used to render himself helpless, dependent, and defenseless and at the same time blameless for his failures. However, taking antabuse has deprived him of this instrument, and he is left to face his hazards more clearly. His present techniques in facing these hazards have been described. Psychotherapy of an intensive type continues. One year after starting treatment he shows signs of meeting some of his lifes situations more maturely.

Case 2.—A 55 year old railway clerk described himself as a periodic drinker since the age of 16. In the past few years sober intervals became shorter and less frequent. A trial with Alcoholics Anonymous was short-lived. His wife demanded he accept treatment. He readily agreed to this and to the administration of antabuse. Initially he was affable and euphoric, boasting how well his work went. He gave some details of his background, talked of sibling rivalries, and his feelings of rejection by his mother and his hostility to her. He could verbalize his rivalry with his wife, who supplied his dependency needs and shouldered his responsibilities, while she was successful in an important position in a labor union. Though he was intelligent and gifted, a good conversationalist, an amateur writer, and a labor leader, he was erratic in his interests and was unable to concentrate on any one project.

Before he entered the hospital for preliminary study, he surreptitiously consumed enough alcohol to render him "high" when he finally arrived. He was frightened of the alcohol test, but enjoyed the whiskey and he discovered that the alcohol-antabuse symptoms were not too bad. After two weeks of faithful self-administration of the drug he began to require reminders by his wife to take it. He found it necessary to frequent bars, to make a phone call etc. Then he would order a soft drink at the bar. While I was out of town, he found occasion to experiment with beer instead of the soft drink, and learned that the flushing and hyperpnea were tolerable. He began to resist attempts at psychotherapy: he assured me that he knew what was wrong, and that he had learned to understand himself. He stated that it was too painful to realize that he wanted to be anyone but himself, and that he could not accept his own mediocrity. Meanwhile, though he refrained from any overt hostile demonstration to me directly, he berated me to his wife and quarreled with her insistence that he continue therapy. Eventually he stopped taking antabuse, began to drink more heavily, broke appointments, and finally stopped treatment altogether.

Case 3.—A 28 year old laborer was referred by his employer because his wife had complained of his drinking, abusiveness, and threats of bodily injury to herself and their child. Though he drank constantly, he remained at work and was considered competent. These statements were readily admitted by the patient who said he liked the freedom which drink gave him. He wished he could join an armoured division in Korea where he could have freedom, adventure, and alcohol just as he did during the last

war in France. He had been drinking since he was 14, but in recent months had drunk more heavily. For several weeks before coming for treatment he had undergone a change in personality.

Despite his drinking, he always had previously manifested a sense of responsibility and was friendly at home. With the change he began to protest the obligations of marriage, and to demand a divorce. He became irritable with his wife and child, spent money irresponsibly and borrowed more, neglecting to provide adequate funds for the home.

He had been married for three years. Apparently his wife had proposed to him, telling him she could give him stability and help him give up drinking. After marriage he felt its restraint, and the drinking served to ease his feelings, left him free to seek other women, and to escape the four walls which home represented to him.

On the initial visit the patient was friendly, affable, outwardly co-operative. He came alone after the priest spoke to his employer. He could not see any reason for giving up drink, and was not sure of his ability to do so, even if he so desired. Five days after the first visit he was hospitalized as an emergency case, following a particularly severe aggressive outburst at home, which was terminated by a weeping spell, and then a syncopal attack without convulsions. He was conscious and rational several hours later when he arrived at the hospital. Physical and neurologic examinations were negative, and psychologic studies indicated a dependent person, repressed and substantially weak, in a depression and with a sense of being overwhelmed by his problems. There was no evidence of psychosis, but every indication of neurotic processes causing his disturbed behavior.

The patient submitted to the administration of antabuse readily. His tolerance for the drug required 3 to 4 grains daily as a maintenance dose, and the alcohol test produced moderate immediate effects, but severe delayed gastro-intestinal symptoms. With the discontinuance of alcohol he became restless, tense, irritable, and felt the urge to drink strongly. He was tempted to enter saloons often. He avoided his old cronies because they drank often, and when forced into their company satisfied some of his feelings by holding a bottle of soft drink in his hand, and by drinking soda water and coffee. He required moderate amounts of sedation.

On the other hand, during the enusing three months, he began to take pride in the accomplishments of his sobriety. He bragged about his new furnishing at home, his wife's new clothes, and his interest in his child. He found that his work required less effort and time than before. The irritability lessened, and he felt more content at home, realized that his wife was good to him and for him, and felt no need for other women or nights away from home. But it was possible to stir up in him happy reminiscences of the freedom of army life, where the officers had encouraged him to drink during combat. It is interesting to note that he continues to fondle a bottle, even though it contains no alcoholic liquids.

Case 4.—A 35 year old trucker was referred for treatment because he had been having nightmares for three months, and was drinking increasingly

heavily. He stated that he had drunk since he was 17 years old, and found need to resort to alcohol in the face of every crisis.

He is the youngest of five siblings. Both parents died while he was overseas during the war. When he fell heir to his father's business his wife carried on in his absence, and she still assists him with his records and accounts. He had been married for 12 years, and there are 3 children ranging from 11 to 3 years of age. There had been much marital discord, especially over his drinking. When he first presented himself for psychotherapy he appeared to be a compulsive, irritable man, with a ready show of hostility. He habitually broke appointments at the office, and on his wife's insistence he submitted to antabuse administration.

The patient actually is a very dependent person, who recalls that as a child he would easily get excited, tend to vomit, have great thirsts, and generally had his sister fight his battles for him. When his mother, to whom he was devoted, died, he became "blind" drunk. During the war he coldbloodedly murdered some captured German prisoners. He felt strongly about the Korean war, identified with the suffering soldiers, and felt irate at the un-understanding public.

Since taking antabuse he had abstained from alcohol, until New Year's Eve, and has been more steadily at his work. He was more tolerant of his children, became active in their Cub Scout work. But he found himself becoming increasingly irritable and tense at work, he ate poorly, and slept fitfully. He found that he was drinking four cups of coffee with each meal, dreamed on one occasion that he was drunk and wondered why he was not sick. In another dream he visualized himself inflating the tire of his truck to 95 lbs. pressure, and wondered why it did not burst. In associating on this dream, he recognized his mounting tensions. He drank bottled soft drinks more frequently. Recently he was incontinent of urine during the night.

During a New Year's Eve party he began to drink again and neglected to take the antabuse. This resulted in family rows and his wife developed anxiety and depression symptoms which became severe. At this point the patient was hospitalized for a week. He resumed antabuse treatment, and was subjected to inhalation of a mixture of 30 per cent CO_2 and 70 per cent O_2 as recommended by Meduna (2). As a result the anxiety dramatically disappeared, and during the next 3 months the patient remained content and free from tension and the desire to drink. His wife, subjecting herself to psychotherapy, began to handle herself better, with the result that the family for the first time in many years was functioning on an adequate level. He has been able to ventilate his feelings of hostility and inadequacy, and to meet irritating situations directly rather than by suppression of his feelings which previously would reach an explosive point. There has been a definite gain in insight. Therapy is continuing at present.

Case 5.—This 65 year old card dealer has been drinking for 40 years. His wife, to whom he had been married 14 years, demanded that he stop drinking or she would leave him. He has been employed by his step son-in-law,

but recent gambling raids made him unemployed. There has been a considerable amount of marital discord, and much complaint by his neurotic wife about his inadequacy.

He acquiesced to the antabuse treatment reluctantly. There was a moderately severe reaction during the alcohol test. After discontinuing alcohol, he became tense and sleepless, requiring mild sedation. Beer advertisements on the television disturbed him greatly, and made him thirst for it. Instead he drank bottled soft drinks, enjoying the feel of the bottle in his hand. His appetite improved and he ate enormously, gaining weight. His consumption of coffee increased. In the following weeks he became more calm, was able to tolerate good-naturedly his wife's constant complaining and compulsiveness, and seemed contented and happy. He has been treated only supportively and comes to the office once in four to six weeks for the maintenance supply of antabuse.

Discussion

An opportunity to treat chronic alcoholics and to study the underlying dynamics becomes possible through the enforced abstinence resulting from antabuse therapy. Although the dependency needs of each patient reported in this series becomes clearly evident from the history and responses to treatment, differing mechanisms and reaction formations could be established for the individual patient. The problems of therapy required an appreciation of the need to support the patient after the withdrawal of alcohol, and to assist the patient in working out the specific dynamic needs in each instance.

The use of alcohol as a means of furthering the patient's self-destructive drive has long been recognized. In our series this was particularly evident in 2 patients. Each time the patient's overt goals seemed within reach, a prolonged alcoholic bout defeated his aims. The unconscious need to fail was established during therapy. With the administration of antabuse, this familiar pattern of behavior persisted, with the difference that he could no longer escape the awareness of what he was doing, and he was not permitted to lessen his responsibilities. As a result, the tension within him mounted to an unbearable level, and the wish to commit suicide became almost irresistable. At this point the strong supportive role of the therapist served his dependent needs and prevented the more dire consequences of his drives.

A second patient met this crisis by rebelling against the therapist, and reverted to his drinking despite the discomfort of the antabuse-alcohol symptoms. In one of these patients there was an unresolved Oedipal wish which he was compelled to deny; in the other there was a persistent resentment because his mother had rejected him. The

dynamics in the other patients were not as clearly established. Each was reacting to his dependency with feelings of resentment and hostility and used alcohol to free himself from responsibility and to express his rebelliousness.

The enforced abstinence was accompanied by increasing tension and anxiety. Oral needs were gratified by consuming large quantities of soft drinks and coffee. Each patient reported that he has had dreams or fantasies about drinking or sitting in bars, one being particularly distressed when he watched television advertisements of beer. It is of interest to note how comforting it was to feel a cold bottle in the hand.

The attitude of their wives played a significant role during the treatment. The wives had initiated the program of treatment, and demanded, either overtly or by implication, that it be continued. The one wife who left her husband when he discontinued treatment has since returned though he has been adamant in his refusal to continue therapy. In another instance the wife stood by in the marriage despite her husband's constant threat to divorce her, until he finally forced her to leave and sued for divorce. Later, during an emotional crisis, she returned, and apparently there is a better adjustment. In every instance, the support of the wife has been helpful in tiding over the periods of tension and discomfort.

Similarly, the psychiatrist adopted a strong supportive, though nondirective, relationship with the patients. They required approval, sympathy and appreciation for the efforts they made. Dynamic psychotherapy was not applicable to all of the patients, and had to be utilized slowly and with caution where it was used. This seems to be particularly applicable in chronic alcoholism where it is easy for the patient to stop his antabuse medication and revert to alcoholism.

Conclusions

1. Enforced sobriety by the use of antabuse (tetra-ethylthiuram disulfide), successful in 4 of 5 patients under treatment for chronic alcoholism, rendered psychotherapy possible in some instances.

2. The dependency needs of the patients required strong support from the therapist in the early periods of denial of alcohol. Oral demands were gratified by consuming large quantities of fluids.

3. Behavior patterns present during alcoholic bouts were repeated in toto during sober periods under adequate provocation. This would support the contention that the behavior during alcoholism is an acting out of compulsive drives which are too painful to perform during sobriety. Such behavior during sober periods was accompanied by almost

unbearable anxiety, culminating in searches for escape either in suicide or reverting to alcoholism.

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VETERAN STATUS COMPLICATING PSYCHOTHERAPY*

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AND

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Psychotherapists recognize that often a distinction of varying degree exists between veteran patients and other civilian patients and are aware that this distinction creates a complication in treatment. Valenstein, describing his experiences in this clinic, says: "Most common among veteran patients is their feeling of alienation from civilian groups, such as the community and the family. Neurotic veterans feel particularly isolated; they identify neither with soldiers nor with civilians. They feel unappreciated, rejected, exploited, and insecure. They are bitter and many rationalize their hostility in criticism of individuals, social groups and the Government."

This feeling of alienation is perceived in the treatment situation. The veteran with a service-connected diasability is entitled to medical care and in exercising his prerogative of requesting treatment displays certain typical attitudes. Such a simple matter as waiting for an appointment may be interpreted by the patient as a sign of neglect. The therapist's offer of time, interest, attention, and efforts to understand is countered with insistence on self-direction of medical care and demands for "real" treatment, including medication, physical manipulation, and elective surgery. Many physicians have felt forced to yield to such requests of veteran patients who seem to feel it is a disgrace to suffer from a psychologic disorder. Such feelings are shared by civilian patients, but in addition to the significance they have in common, to many veterans the feelings seem to be of greater intensity and have a special meaning which will be described later.

The veteran patient recounts his symptoms and wartime experiences in a repetitive, ruminative manner with the added intent of emphasizing his status of prestige as well as indicating his need for help. Being a veteran does seem to represent a special status which receives recognition from the community in the form of certain rights and privileges,

* Read at March 1951 meeting of Boston Society of Psychiatry and Neurology.

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and this status may be interpreted by the veteran in accordance with his own needs.

Certain types of service accrue more prestige than others. Overseas combat duty or service in the Air Force rates higher than noncombatant duty in the Zone of the Interior or service in the infantry. The award of decorations defines another series of values which further enhance the status of the veteran. However, such prestige is not static and tends to diminish as time passes. This may be felt as a loss and efforts may be made to preserve this gratification.

The dictionary defines a veteran as someone who has some long experience in certain matters. In this sense, an ex-serviceman who, in line of military duty, had adapted and adjusted himself to varying situations and circumstances can be considered one who has a special experience in contrast to someone who had not been in military service. Every new life situation which has been mastered may be regarded as something accomplished by the individual; there is a feeling of having accepted and completed a task, a knowledge that one has tolerated anxiety and not been overwhelmed by it, an identification with a larger successful group through uniform, flag, and other symbolic means.

In contrast, many veterans with neuropsychiatric disabilities regard their experiences in the service not as something of a positive achievement but as further proof of their failure at mastery. The military service and later the compensation system, seems to sustain and intensify the feeling of failure. The purpose of this paper is to attempt to clarify and elaborate on these two features which seem to distinguish the neurotic veteran from civilian patients.

The military service included many types of duty assignments in the zone of the interior or combat theaters. For each serviceman, this duty represented some type of stress. The spectrum of stress endured runs from the mildest forms, separation from family, through various hardships, difficulty in relationship to authority figures, and finally to exposure to injury, annihilation, and death. The serviceman reacts not only to his own real experiences but also to his fantasied participation in the experiences of other soldiers. He may respond to a given stress situation with a diffuse anxiety reaction or with a typical neurotic reaction pattern, depending on the nature and severity of the stress. After leaving the stress situation and after the generalized reaction has been dissipated, the trauma becomes the focal point around which pre-existing conflicts are crystalized. For this reason, overt symptoms are often related to the military situation without regard to whether they had appeared prior to, during, or after the service.

The conflicts pertain generally to the attempts of the ego to control, to avoid perception of, and to defend itself against the direct expression of instinctual drives. In these attempts at mastery the ego is stimulated by the requirements of reality and supervised by the demands of its own superego. Feelings of anxiety, guilt, and other symptoms indicate the measure of success or failure of the capacity of the ego to integrate and gratify all the demands placed on it. The demands of the military service may activate different conflicts, reaction patterns, and responses in accordance with the individual's previous make-up.

We might, for the sake of simplicity, classify the responses to stress into two general groups, passive and active. In the first group conflicts are expressed which are related to military discipline which may stimulate felings in regard to submission; KP duty which may be interpreted as feminization and castration; latrine duty which may be regarded as a degradation; overseas duty and actual combat may provoke feelings of abandonment; and the close association with other male companions may arouse the fear of a homosexual attack. In the second group conflicts are expressed which are related to hostile aggression, such as the killing of the enemy; destruction, such as the bombing of civil property; and direct libidinal gratification, such as sexual promiscuity, excessive drinking, etc. These responses do not exhaust all the potential experiences, but they are presented as common ones. The significance of the experience lies in the fact that to the patient an unconscious fantasy has been partially realized. It is this living out in reality or concretization of the unconscious fantasy which gives added meaning to the stress and accounts in part for the patient's fixing on the real experience as the cause of his illness. The ego fails to discriminate between the real external military situation and the internal unconscious wishes and is thereby threatened with loss of mastery. The fear provoked by the real situation is augmented by the guilt and anxiety appropriate to the carrying out of forbidden unconscious wishes. The guilt is modified by the fact that prohibitions existing against the expression of certain aggressive impulses in civilian life are lifted for military expediency. Guilt is diminished further by sharing it with the group. Absence of identification with the military unit and its purpose does not permit a new military super-ego to be established and fails to give the ego the needed support to cope with the accusations of its old super-ego. The ego cannot accept the assumed role and must surrender the activity condemned by the super-ego or suffer increased anxiety and guilt.

For example, let us take the initial step that a civilian takes in entering military service, that is, leaving home. The situation may

provide a gratification of an unconscious hostility against the parents. Not only is the individual now confronted with his own fears and guilt over expressing this rage, but these are added to by unconscious fears of retaliation on the part of the parents, which are further strengthened by the actual threat of combat.

Another instance would be that the individual in leaving home gratifies an unconscious wish to abandon his wife and children and his role as a husband and father. Guilt feelings over this type of gratification are somewhat modified by the general attitude of condoned aggression in military service.

A more detailed example is provided in the next case. A patient, who for many years had strong impulses to destroy his father, in actual combat killed a large number of the enemy. When his aggressive impulses threatened to carry over to his feelings toward his officers and he came too close to his realization of his unconscious wish to kill his father, he was forced by the intensity of intolerable anxiety to surrender his combatant role. Instead of being a rifleman to kill others, he volunteered to drive a truck to serve others and thus assumed a more passive role. At the same time, to counteract these hostile feelings, more positive feelings were expressed, threatening him with gratification of his unconscious homosexual impulses with the resultant development of more guilt and anxiety.

The fortuitous occurrence of a minor wound brought about escape through hospitalization, where the patient regressed to a childlike, dependent state. Eventually the sight of more seriously wounded men aroused so much guilt feeling that he asked to return to the front lines. However, he developed almost immediately a multiplicity of psychosomatic symptoms as an expression of his inability to cope with the conflicting feelings mentioned above.

Behind every real experience lies the potential gratification of some unconscious wish with the resultant intensification of the previous conflict. The ego defensively surrenders attained active or passive roles to ward off anxiety. Each surrender of an accepted ego role successively leads to regression to earlier levels of identification and of ego functioning in which attempts at mastery are expressed in more primitive ways. Finally, if the stress continues long enough or is overwhelming at the start, the ego may develop a complete flight from reality in a psychotic-like state as a response to unbearable anxiety.

The veteran patient at a later date shows that the ego's efforts at regaining equilibrium still are aimed at eliminating the stress or stresses which originally incited the internal conflicts and the resultant anxiety. One aspect of such a type of restitution is that the patient feels he must

regain control of his environment and not of himself. Yet paradoxically he conceives of this in the form of acting successfully on any impulse, be it sexual, dependent, or aggressive. Fear as to outcome leads to phobic avoidance of test situations with dread of being overwhelmed by forceful impact of his desires. Reality takes on the aspect of being broken up into civilian, military, and veteran and, distorted by projective mechanisms, is generally perceived as hostile.

To the patient, the special status of being a veteran becomes something distinct and apart from other people, neither soldier nor civilian. The veteran who successfully accomplished his military duties is apt to bear his status as a mark of regard; whereas the veteran whose military duties had a subjective significance finds that his new status brings new problems which he must bear alone and cannot share with a group as readily as when he was in the service.

In this new status, prohibitions against passivity are not operative as they are in civilian life and there results a reinforcement of dependent needs. Pertinent pre-existing conflicts over passive oral dependent wishes, homosexual impulses, or a basic feminine identification may be reawakened. The ego experiences anxiety with this new challenge, especially if the veteran has been granted compensation for a disability incurred during his service. For now he feels that official sanction (the externally projected super-ego) has been given to the ego for using the military situation to gratify its own id impulses. Does this mean sanction of use of the veteran status to gratify passive wishes?

Some veteran patients reflect this problem by coming to the clinic to seek permissive counseling about every decision in life with which they may be confronted. With others, there is a renewed need for aggression as a masculine protest. In this group there are those whose defenses do not permit them to accept compensation or Veterans Administration medical care, while many patients state that they would like to return to the branch of service in which they had served as a self-curative measure, as though only in the military service is activity, in the form of aggression permitted to be directly expressed. It would seem that they seek a retrial of their masculinity. But in this again there is a flight from reality and a desire to realize their fantasies in a direct magical way. Reality does not exist except as a stage on which they will live out their dreams and projections. There is no real mastery or integration which would permit the needs of the patient to be expressed in actual compliance with the demands of reality. In effect, for such a patient to become a civilian, means to face reality; to become a soldier means to live out his childhood fantasy of masculine prowess; while being a disabled veteran means to have failed in both.

Some of the reactions to the military experience have been indicated in perhaps a condensed form. Several points deserve further elaboration, but we would like to turn now to a discussion of the medical rehabilitation plan.

Bonus awards, the G. I. Bill of Rights, were legislative benefits created to compensate the veteran who as a civilian was dislocated from a profitable, secure life, or was interrupted in the midst of training and education, to meet the emergency threat of war. The compensation system and the medical rehabilitation plan differ from other veteran benefits in that they are reserved only for those who incurred a disability during their wartime military service. They may be contrasted with prepaid medical plans issued by insurance companies. Wartime military duties replace paid premiums and no limits are placed on the medical service rendered, nor on the length of time compensation is paid for rated disabilities.

The provision of this type of rehabilitation protects the veteran from the indignity of charity, relieves the immediate anxiety of postponed or reduced income, and makes available the required medical care.

However, we shall see that both the public and the veteran add other meanings to these purposes.

Clinically, we observe some patients who long after service present the picture of an acute illness, as though the situation were still threatening under which they had first apparently suffered the disturbances in their equilibrium. The question arises whether the patient's search for compensation is a factor in this perpetuation of the overt symptoms. Many psychiatrists have stated that it is impossible to treat successfully someone who is getting paid to remain sick and who will be penalized if he gets well, and they have said that if the financial element were removed that the patients would recover. Yet, not all the veterans are sick, nor do they all seek monetary compensations. As some psychiatrists have noted, the incidence of neurosis was apparently at a minimum among people who have been exposed to certain trauma, i.e., residents in cities where bombing took place. For many, reality anxiety absorbed the previous free-floating neurotic anxiety; while for others the symptoms went underground, since everybody was exposed to the same experience and to have obvious symptomatology in itself was not going to remove them from danger. Whatever the patient suffered had to be suffered silently, so to speak. We must then ask the question more specifically. Why does the disabled veteran continue to present his symptoms? Why doesn't he hide his symptoms also?

The fact remains that those patients who tell us about their symptoms

and apparently are not being helped by all efforts at therapy do suffer silently. Their suffering is related to several elements.

One has already been mentioned. The duties of the serviceman as determined by the military mission included the annihilation, destruction and conquest of the enemy (*Operation Killer* of the Korean War). The veteran may interpret the award of postwar benefits as public condonement or forgiveness for whatever gratification he had gained from this experience. There is another element of this same attitude. Historically in this country there is a public distrust as well as regard for the soldier. In some ways he is regarded as a professional killer. Some of this feeling is carried over to the veteran. There is a widespread newspaper use of the word "veteran," especially in connection with crimes of violence, which serves to reflect and sustain this feeling. It would sometimes appear as though the public uses veteran benefits as tribute in order to safeguard itself against the acts of aggression by the returned serviceman. Some disabled veterans share this feeling and identify themselves with erstwhile enemy nations by rationalizing and justifying their acceptance of compensation or other benefits by pointing out postwar United States aid to Germany and Japan.

There are other aspects of this public-veteran relationship. In a test of its faith in certain principles and ideals this nation sent out its sons to war. They became the expendables. The collective guilt of the public in "sacrificing its sons" is manifested in many ways among which is the expressed sentiment "nothing is too good for our boys." It is as though the public wishes to invite the demands of the veteran to atone for the aggressive act of sending him into danger, despite the real need and the veteran's own interest in the outcome of the conflict. Congressional and administrative activity tend to reflect public sentiment in this matter. It may be said that many veterans perceive the collective guilt of the public in this respect and have neurotic needs to exploit it for the care of dependency desires. A kind of parent-child relationship is thus set up between the veteran and the public as represented by the government and its agencies. This is perpetuated on the veteran's side by rechanneling his aggression and turning it against himself or expressing it in the service of his dependent needs. He becomes a "submissive" sufferer and a querulous recipient of benevolent care.

Finally we would like to consider the passive dependent character. Some of the patients who continue to draw compensation and spend a lifelong battle in order to obtain it have a history of previous maladjustment, of impoverishment, of rejection by their families or a feeling of being tainted from birth. Such patients are quite common in civilian practice. They form a substantial proportion of the hospital population.

They are constantly being taken care of by the community and the state. They too resist efforts at treatment even though no one pays them to remain sick. It certainly would be fallacious to say that only those are sick who are paid to be sick. Veterans with a passive dependent character structure use their compensation to force the Government to give them that which they feel they never had. Their military service revived old feelings of being rejected and unloved by their parents. They now try to use money as a substitute for this loss of love and are insatiable in their demands. But the compensation is an unsatisfactory substitute and can never make up for their feelings of deprivation. Their whole life now reflects this tragedy. They lead a life of retirement but do not get enough money to meet much more than basic economic needs. Nor are they able to rise above it because of their own feelings of guilt and need to remain dependent. Although in most instances the money is barely sufficient to enable them to eke out an existence for themselves and their families, yet we find them unable or unwilling to take on work, while the receipt of the monthly check is a reminder of their weakness, helplessness and failure.

Summary

Some impressions of the difficulties complicating psychotherapy with veterans have been presented. The difficulties arise from the patient's being a veteran, which seems to represent a special status. The importance of this status is related to the military experience and to the compensation system. The military experience is used by some to gratify unconscious wishes. This confuses the real situation with the unconscious impulses and threatens the ego with a loss of mastery. Successive surrender of ego roles because of guilt and anxiety leads to immature levels of functioning. Condoned aggression in the service is followed by condoned passivity as a veteran. The latter encourages regression, especially if a disability rating is taken to mean sanctioning of unconscious gratification in the military service. Both the public and the veteran use medical rehabilitation to express attitudes unrelated to treatment. The veteran is considered hostile and aggressive by the public and kept in check by the payment of tribute. The public expiates its guilt for sacrificing the serviceman on the battlefield by now treating him with preferential favoritism. And finally the veteran with a dependent character structure uses his compensation and medical rehabilitation in a futile attempt to make up for all previous deprivations.

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THE "CAPACITY TO SPLIT"

The Pathogenesis of Schizophrenia in the Light of Its Association with Mirror Movements

MAX LEVIN, M.D.

Meyer (6), in an article of unusual interest, has reported a family in which schizophrenia and mirror movements existed side by side. The study of the family was conceived when "the father of a young schizophrenic son and daughter volunteered the information that he possessed 'mirror movements,' and he . . . (wondered) whether this variation might have any bearing on the fact that he had two psychotic children." On genetic grounds Meyer concluded that the association of the two disorders in the same family tree is pure coincidence. The object of this paper is to give reasons in favor of the opposite conclusion, for it would seem that mirror movement and schizophrenia, different though they are, resemble each other profoundly in their inner nature.

Mirror Movements

This term means that one half of the body imitates the other, movement of a limb producing a mirror movement of the opposite. Thus the father reported by Meyer said that when he opened the door of his car with the right hand, the left made a corresponding twisting movement in space, and when he reached in his pocket for money the other hand groped likewise. The condition had been present all his life. With effort he could suppress the mirror movement, but it reappeared the moment his actions became automatic.

In infancy the two halves of the body tend to act in unison. One measure of growth and maturation is the ability of a part of the body to do something while other parts are at rest, or, better yet, while other parts are doing something else. Every piano student knows how hard it is to play two beats in the bass against three in the treble.

The capacity for simultaneous action applies not only to movement but also to mentation, i.e., there is a capacity to carry on several trains of thought at one time. Between the execution of a movement and the pursuit of a train of thought the difference is one of complexity only. The historian Gibbon (3) said of the Emperor Julian, whom he fervently admired, that he "possessed such flexibility of thought, and such firmness of attention, that he could employ his hand to write, his ear

to listen, and his voice to dictate; and pursue at once three several trains of ideas without hesitation, and without error." Whether Gibbon has exaggerated is beside the point. The point is that he held it admirable, and rightly so, to be able to pursue several lines of complex activity at one time.

This capacity to carry on several lines of activity simultaneously may be reduced by cerebral disease. The great physiologist Pavlov noticed this in himself as he grew old. He said (7): "With advancing age I progressively lose the faculty, when busy with one activity, of performing correctly another also."

In the case of a woman of 70 with senile dementia, the relatives said that in her prime she did her housework with marvelous efficiency, and in the kitchen she "could do ten things at a time." As her illness progressed she lost this faculty, and "now, if she's only doing *two* things she can't keep track of which is which."

We shall now see how this matter bears on schizophrenia.

The Concept of "Splitting"

Thanks to the monumental work of Bleuler (1) the concept of "splitting" is firmly embedded in the minds of psychiatrists. But while the concept has helped enormously in the understanding of schizophrenic symptoms, it has at the same time, in my opinion, misled physicians into a false conception of the pathogenesis of this disorder.

The concept of splitting is useful in the description of symptoms, especially as regards train of thought and association of ideas. The patient's thoughts and actions are not consecutive; they don't hang together but are scattered and fragmented. Bleuler in this connection used the word "Lockerung" or loosening (as the loosening of earth with a plow). Influenced by this concept, physicians have tended to think in terms of a figurative splitting of cerebral tissue, picturing a brain in which the centers and pathways in the substrate of the mind are unduly divided and no longer function as a unit. Like an undisciplined army, the components of the substrate of the mind are thought to be acting capriciously and independently of one another, each on its own, thus giving rise to disharmony and confusion.

Stimulated by the concept of splitting, Enke (2) and others have studied the capacity of normal people to attend to two or more matters simultaneously. The subject is given tasks to carry out simultaneously, and the manner of his performance and the number of errors are noted. Such tests measure the capacity to "split" one's attention. Enke found a correlation with physical and psychologic type, schizothymic people surpassing cyclothymes in their "capacity to split." He said:

"The superiority of schizothymic over cyclothymic persons in their capacity to split their attention . . . is obviously based primarily on the greater capacity for . . . psychic splitting which is characteristic of the schizothymes. (His investigations show that) schizothymes have greater ability to split . . . than cyclothymes. As a result of this capacity, they succeed better than cyclothymes in distributing their attenion to different simultaneous tasks."

A paper such as Enke's is apt to be misleading, for his readers are likely to infer that the "capacity to split," a trait in which schizothymes are said to excel, is the prime ingredient of the splitting which has given schizophrenia its name. They are likely to infer that schizophrenic splitting is but a morbid exaggeration of the "capacity to split" found in healthy people. But such an inference leads to absurdity. The "capacity to split" studied by Enke is a virtue, not a weakness. To suppose that this virtue, sufficiently enhanced, is the basis of schizophrenia is grotesque unrealism. It is like arguing that a man with a bad heart can run farther than a healthy man. The truth is quite to the contrary. Far from being present in abundance, *the "capacity to split" is wanting in schizophrenia* (4).

Loss of "Capacity to Split" in Schizophrenia

It is characteristic of schizophrenia that the patient confuses things which the healthy man keeps apart. Two aspects of this problem may be considered.

1. *Confusion of Symbol and Object.* Schizophrenics tend to confuse symbol and object. Thus a woman, speaking of a popular movie actor, said, "He was smiling at me." When asked when and where this happened, she said she was sitting opposite a fellow patient in the hospital day room, and the other woman was reading a magazine held in such a way that a picture of the smiling actor on the cover looked right at the woman telling the story.

Children too show this confusion. When my son was 24 months old he was discovered to be treating pictured objects as though they were three-dimensional. Looking at automobiles pictured in magazine advertisements, he would try to seize them and lift them "out" of the page, and in his frustration he would beg, "Daddy, get car out." At 27 months, drinking milk while looking at the picture of a horse, he said, "(I'm going to) give milk to the horsie," whereupon he spilled some milk on the picture. At 28 months his powers of discrimination had grown to the extent that one day, while looking at the picture of an aeroplane, he made no attempt to lift the object from the page but said instead, "David can't get the plane out"; he said this not in complaint

but as a simple statement of fact, as if to say he knew it was just a picture. At 32 months, looking at the picture of a children's slide showing some children climbing up and sliding down, he said, "Look! When I get in the picture I (will) go up those steps and go down the slide."

2. *Confusion of Relevant and Irrelevant.* A schizophrenic woman from the South, in a ward for white patients, thought it was "the colored ward"; when asked why she thought so, she said she had been brought to the hospital by a nurse named Brown. Another example is taken from a case of bromide delirium; though the patient was not schizophrenic, the example is useful for it illustrates the sort of thinking that is characteristic of schizophrenia. The patient, at the Harrisburg State Hospital, when asked what place this is, replied "Philadelphia." (What part of Philadelphia?) "The northeastern part." (How do you know that?) "I can tell from the way the sun shines into my room."

These examples show the inability to distinguish the relevant from the irrelevant or pseudo-relevant. The last example is striking, for the patient's reasoning has a superficial plausibility, and you have to be on the alert to catch on to the fact that one thing doesn't follow the other: the angle of the sunbeams entering the room does indeed have a bearing on the points of the compass, but it indicates the direction the house faces and not the part of the city it is in.

The capacity for association of ideas is boundless, and thoughts and images without number cross the mind, some of them relevant and many irrelevant to the matter at hand. The mind must distinguish one from the other, a task in which the schizophrenic mind is inefficient. Here too, as in respect of the confusion of symbol and object, illuminating data can be obtained from the infant. In early life ideas lack sharpness of definition. More particularly, they are too broad, too general. For example, a girl of two got up one winter morning and, looking out the window, saw a mantle of fresh snow, whereupon she exclaimed, "Look! Sugar!" Her idea was that a white substance of given appearance and texture is automatically sugar. When she began to feel and play with snow, a process of differentiation occurred, and she progressed from general to special, learning that white granular substances vary, and that sugar and snow are different despite some points of resemblance. This is a process of "splitting," a broad concept that is too general being split into several narrower and more special concepts.

Schizophrenic inability to differentiate is seen also in confusion of abstract and concrete, of figurative and literal, etc., which need not be illustrated here (5). Enough has been said to show that the "capacity to split" is a virtue which is not enhanced, but on the contrary reduced, in schizophrenia.

In the undeveloped nervous system there is a tendency for large segments to function as a unit, a tendency to mass reflexes. The movements of the infant involve the large joints and tend to be symmetrical. Movement of a single finger, as in the violinist's left hand, is an index of maturity. Another index is the capacity to carry out two or more actions simultaneously. A circus juggler, lying on his back, twirled, with the tip on one foot, a wheel whose rim was set with torches, the plane of the wheel being horizontal; at the same time, in a vertical plane and with his other foot, he twirled a small hoop, while with his hands he juggled several balls. His "capacity to split" was prodigious. The brain may be compared with a factory of a hundred workmen. If the workers are skilled and the factory well run, it will be possible to carry on several jobs at one time, each job requiring only a fraction of the labor force. If, however, the workers are lazy and unskilled and the administration bad, the entire personnel might be tied up in one job, there being no hands or energy for anything else at the moment. In schizophrenia the brain is like the second factory.

When mirror movements and schizophrenia exist side by side, as in the family reported by Meyer, it is hard to believe that the association is fortuitous, for the two conditions are manifestations of a deficiency in the "capacity to split." To be sure, the matter needs further study. Schizophrenics ought to be studied from the standpoint of mirror movement and of the "capacity to split." Are they, for example, lacking in the ability to move the two hands independently, as in the playing of dissimilar rhythms on the piano? I venture to think that in some degree they are. But even if, as a group, they should be found not wanting in this respect, this would in my opinion not necessarily detract from the probability of an inner relationship in those cases where mirror movements and schizophrenia are found together.

In viewing schizophrenia as a problem in cerebral organization and physiology, I am by no means implying that the organic alone is to be considered and not the psychogenic. Study of schizophrenics from the psychoanalytic standpoint has put it beyond question that psychogenic factors play an overwhelming role in the cause of this disorder. But they operate by crippling some cerebral mechanisms which, as a result can no longer function effectively. A problem in psychosomatic medicine is always twofold: one must consider the psychogenic factors at work, and the manner in which they disrupt a physical mechanism. It is only with the cerebral mechanism of schizophrenia that this paper deals.

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TOXIC EFFECTS OF CYCLOPYRAZATE®

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Frequent references in the literature have emphasized the prominence of psychic symptoms resulting from atropine intoxication (8). These effects have included delirium (5, 9), hallucinations (4), and changes in mental status (3). The recognized value of the anti-acetylcholine effect of atropine led to the investigation of many synthetic derivatives in search of one without these undesirable side effects.

Recent investigations of the pharmacology of Cyclopyrazate® (β-Pyrrolidinoethyl $\triangle^2$-cyclopentenyl phenyl acetate hydrochloride (Upjohn Company)), have suggested its use as an antispasmolytic agent (6, 7). Experimentally, the drug has been shown to be as effective as atropine against acetylcholine spasms of intestinal strips (7). Batterman, in a clinical study, has demonstrated the narrow therapeutic range of Cyclopyrazate® (2). The present study was undertaken to evaluate the toxic effects of this drug on the central nervous system.

Method

The drug was administered to 10 volunteers, 2 of whom were normal subjects and 8 were patients at the University of Michigan Hospital Neuropsychiatric Institute. They were chosen because of availability, with no purposeful selection as to diagnosis. Ages ranged from 16 to 61 years. There were 4 males and 6 females. All observations were carried out in rooms in which identical conditions of temperature, illumination, and environmental stimuli were constant. The subjects were kept at bed rest for at least 15 minutes before the administration of the drug. During this period control observations were made. These included pulse, blood pressure, respiratory rate, oral and skin secretions, muscle tone, tendon reflexes, gait and station, Romberg, adiadokokinesis, sensory responses, motor action, pupillary size and reaction, orientation, organization of thought, speech, affect, and subjective sensation.

Following administration of the drug into the deltoid muscle in doses of 20 to 48 mg., similar observations were made at intervals of not more than 20 minutes, until all effects of the drug were dissipated. Three

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TABLE I.

Case	Age	Sex	Weight	Diagnosis	Dose (mg.)	Mydriasis	Oral Secretions	Ataxia	Muscle Tone	Sensory	Cerebral
1.	26	M	160	N.	30	Moderate	Absent	Marked	Flaccid	Tingling	Euphoria, poor concentration, subjective weakness, confusion, mental difficulty
2.	23	F	125	N.	20	None	No change	Slight	No change	None	Giddy
3.	26	M	153	Par.Schiz.	30	None	Minimal	Slight	No change	Tingling Numbness	Marked feeling of well-being, decreased anxiety, confusion
4.	44	M	170	PN Dep.	30	Marked	Absent	Slight	No change	None	Mental confusion and retardation, slight hyperactivity, slurred speech
					40	Marked	Absent	Moder.	No change	None	Confused, unresponsive, stuporous
5.	61	F	95	Inv. Mel.	20	None	Absent	None	Flaccid	None	None
6.	23	F	115	Schiz. or Ment. Ret.	20	Moderate	Absent	Slight	Flaccid	Tingling	Blurred vision, groggy, decreased anxiety
					30	Marked	Absent	Marked	Flaccid	Tingling	Marked inco-ordination, silly, visual aberrations, giddy
7.	20	F	161	Heb. Schiz.	44	Moderate	Absent	Slight	Flaccid	None	Retarded responsivity, semistuporous
8.	16	M	147	Adol. Behav. Dis.	30	Minimal	Absent	Marked	Flaccid	None	Acute psychosis with disorientation, confusion, visual hallucinations and irrelevant, incoherent speech
					20	None	Absent	None	No Change	None	Euphoria
9.	18	F	112	Acute Schiz. c. Part. Rec.	48	None	Absent	Moder.	No Change	None	Reactivation of acute psychosis with mannerisms, disorientation, incoherent and irrelevant speech, confusion and inappropriate affect
10.	41	F	115	Psychomotor Ep.	30	Minimal	Decreased	Slight	Flaccid	Tingling Numbness	Subjective weakness, fatigue

of the subjects (numbers 4, 6, and 8) received a second dose six days after the initial trial.

Results

Results are summarized in Table I. Findings in pulse rate, respiratory rate, blood pressure, and tendon reflexes are not included because these showed no significant alteration. Constant toxic effects related to vegetative, motor, and cerebral functions were observed. Eight of the thirteen trials produced mydriasis, two of these showing a markedly reduced light reflex. All patients but one had diminished or absent oral secretions. All but 2 become clinically ataxic. Mental changes were quite variable. These effects included confusion, poor concentration, retardation, delusions, hallucinations, delirium, and disorganized thinking. Five became euphoric. Mental confusion was apparent in 6 patients. All patients who had a mydriatic response to the drug also reported a sense of well-being and diminished anxiety. Peculiarly, the two trials resulting in psychotic manifestations had no appreciable mydriasis.

The patient (number 8) who previously gave no indication of psychotic tendencies, responded with an acute delirium in which he saw cobwebs and footprints on the ceiling, became disoriented, disorganized, and imagined himself playing ball and groping for the ball on the bed beside him. Another patient (number 9), admitted four weeks before with acute schizophrenia, had subsequently shown improvement on eleven electroconvulsive treatments. She responded to administration of cyclopyrazate with reproduction of the disorganized thinking and behavior patterns seen at the time of admission. After one and one-half hours, when the effects of the drug had abated, as demonstrated by the loss of induced ataxia and other signs, she returned to the improved state present before the trial.

Cyclopyrazate is rapidly absorbed. Onset of dryness of mucous membranes, dilated pupils, or mental confusion was noted five to 15 minutes after injection, and maximum responses occurred at 20 to 30 minutes. Effects were dissipated in one to two hours. Doses of 20 mg. were ineffective physiologically. Doses of 30 mg. or greater produced a peripheral atropine-like response but also exhibited toxic effects on the central nervous system.

Discussion and Summary

Although 8 of the subjects were psychiatric patients, this was not found to be a handicap in the interpretation of the results. All of the subjects were in sufficiently good contact with reality to co-operate. Anxiety symptoms were decreased in 3 of the subjects, but this lasted

only during the period of drug activity. This response might be attributed to the antispasmodic activity or to the production of euphoria. However, no sustained alteration in mental symptoms of these neuropsychiatric patients could be ascertained. Ataxia, dilated pupils, and dry mucous membranes were constant findings irrespective of the diagnosis, but dependent primarily on the dosage.

We do not believe that production of a drug psychosis indicates latent psychotic tendencies. Alexander (1) reports the occurrence of an acute psychosis following atropine "intoxication" in a man with a basically normal personality structure. Following recovery, the psychosis disappears and the personality structure is essentially the same as it was previously. This can be likened to an acute delirium often encountered in patients with hyperpyrexia, but without psychotic propensities.

It is apparent from experimental evidence gained from this study that the therapeutic range of cyclopyrazate is quite narrow. Undesirable psychic effects may occur with minimal doses required to produce a peripheral anti-acetylcholine effect. In comparison to atropine, which is reported to have a margin of safety of 50 per cent (9), that of cyclopyrazate is too narrow to be ascertained clinically. Therefore, its use as a potential therapeutic agent is not to be recommended.

The mode of action of this drug on the central nervous system, especially with reference to its mental effects, is unknown.

The effect of atropine on the higher cerebral centers is thought to be the result of direct irritation (8). This is believed to be responsible for its toxicity in human beings. The close association between cortical motor centers and autonomic activity introduces the problem of relating primary site of activity to the observed peripheral effect. Our investigation offers no conclusive evidence, but raises the possibility of cyclopyrazate being more irritating to cerebral centers than is atropine within their relative therapeutic ranges.

Conclusions

1. Cyclopyrazate, a synthetic atropine derivative, was given to 10 subjects, 3 of whom received repeated administrations. The dosage varied from 20 to 48 mg., I.M.

2. Doses of 20 mg. produced no observable effect.

3. Peripheral effects observed following administration of 30 mg. or more were dilated pupils with diminished light reflex, dry mucous membranes, decreased sweating, muscular inco-ordination, flaccidity, and ataxia, but there were no significant alterations in heart rate, blood pressure, or respiratory rate.

4. Toxic psychic effects were prominent with doses of 30 mg. or

more. These included delusions, hallucinations, confusion, poor concentration, retardation, delirium, and disorganized thinking. Two of the trials resulted in acute psychoses, one an exacerbation.

5. It is postulated that the psychic effects are due to direct irritation of cerebral centers.

6. Because of the narrow range between the desired vegetative effects and the undesirable motor and cerebral dysfunctions, the drug does not seem to be an efficacious therapeutic agent.

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THE EFFECT OF PAINFUL STIMULI ON ALBINO AND ON HOODED RATS

EDWARD J. VAN LIERE
HELEN H. HESS
AND
EDWARD J. FEDOR*

In the course of studies on albino and hooded rats, to ascertain the effects of exercise, it was found necessary to use mild electric shocks periodically to keep the animals running in the motor-driven treadmill. It was accidentally observed early in these experiments that the electric stimuli caused a notable decrease in the propulsive motility of the small intestine in the albino rats, but rats of the hooded variety were relatively unaffected.

Doubtless the painful stimuli, among other things, excited the sympathetic division of the autonomic nervous system, and it would be expected that the propulsive motility of the small intestine would be decreased. It was thought worth while to make a comparative study of the effect of painful stimuli on the two types of rats using the propulsive motility of the small intestine as a criterion.

Methods

A wooden box approximately 11 x 11 x 21 inches was divided into two compartments of equal size. In one of these, a wire grid with half-inch spacing was installed about one-half inch above the floor. A rat placed in this half of the box could rest only on the grid. A secondary coil of a Harvard inductorium (placed on the outside of the box) was connected to the grid; seven volts were led into the primary circuit. A contact-timer delivered brief tetanic electric shocks every five seconds. The secondary coil was set at 4.5 cm.

A pair of albino rats (or a pair of hooded rats), which had been fasted for 24 hours and which were as nearly alike in weight and age as possible, was given 2 cc. of a mixture of 10 per cent powdered charcoal suspension in 10 per cent gum acacia in water by stomach tube. At the end of 10 minutes one rat was placed in the wired compartment and subjected to electric stimuli, and the control rat was put into the adjoining compartment. Thirty minutes later they were taken out of the box and decapitated. The small intestine was removed and slit open, and the distance the charcoal had traversed it was measured.

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Results

The results in the accompanying table clearly show that the propulsive motility of the albino rats was significantly decreased by the painful stimuli, whereas that of the hooded rats was not.

TABLE I.—Effect on Painful Stimuli on Propulsive Motility of Small Intestine of Rat

No. of Rats	*Av. Length of Intestine*	*Av. Distance Traversed*		*No. of Rats*	*Av. Length of Intestine*	*Av. Distance Traversed*	
	cm.	cm.	%		cm.	cm.	%
			ALBINO RATS				
19	111	79*	71**	21	109	64*	59**
			HOODED RATS				
22	118	85†	72††	23	114	79†	69††

*Difference — p = <.001 (t = 3.7956)
**Difference — p = <.01 (t = 3.0194)
†Difference — p = >.20 (t = 1.2746)
††Difference — p = >.20 (t = 0.8166)

Discussion

In evaluating the results we are reporting it is of definite interest to review the work of Richter (1). He has pointed out that there are definite physiologic differences between domestic and wild rats. The latter, for example, are must less susceptible to poisoning with thiourea; domesticated rats also are more susceptible to audiogenic fits. Domestic rats when placed on magnesium-deficient diets developed running fits and all died, whereas wild rats had only occasional fits and none died.

Richter points out further that not only are there physiologic differences, but behavior differences as well. Wild rats' reaction to poisoned food is quite different from that of domesticated rats. The former are distinctly suspicious and are much more likely to reject poisoned food. When a pair of domestic rats was placed in what the author called a "fighting chamber" (a chamber constructed so that electric shocks could be administered) they tried to avoid the pain by jumping, but when they discovered that escape was impossible huddled into a corner. The wild rats, on the other hand, started fighting as soon as the electric stimuli were felt and often fought to the death. The author suggested a number of other behavior differences, such as, the effect of adrenalectomy and replacement therapy. While nearly all adrenalectomized

domesticated rats survived on salt therapy, the wild rat did not. The adrenalectomized wild rats rarely survived more than one exposure in the fighting chamber; this did not obtain in the case of domesticated rats. Richter felt that the results could be interpreted to mean that the normal wild rat is under much greater stress than the domesticated rat, and further, that since the former has a much larger adrenal he is better equipped to take care of the greater stress.

We were, of course, not working with the wild rat, but rather with the hooded rat. We used the Long-Evans strain, which is a cross between the wild gray Norwegian rat and a Wistar albino rat. Although the hooded rat is regarded as a domestic rat, it is more closely related to the wild rat than is the albino. Since this is true, the theory could be advanced that the hooded rat because of its genetic background might be less susceptible to external painful stimuli than the albino. The wild rat in its life cycle is subjected to extremes of climatic conditions, to varied and uncertain food supply, to many natural enemies, and to other environmental hardships. In short it must be alert and aggressive in order to exist; indeed, alertness and aggressiveness presumably have had survival value. In the course of the much longer domestication of the albino rat, these characteristics probably have been partially lost. Consequently, the albino would be more likely to be affected by painful stimuli. The authors realize that it would be helpful if the propulsive motility of the small intestine of the wild rat could be determined under the same conditions as those used with the albinos and hooded rats. For several reasons this is not feasible.

Both albino and hooded rats attempted to escape from the chamber when subjected to electric stimuli, and they often jumped with considerable force against the glass plate which served as a cover. Their reactions for the most part were similar. The hooded rats on the whole appeared to show more signs of anger than did the albinos. No generalizations probably should be made, however, since there was considerable individual variation in both types of animals.

Summary

In summary, experimental evidence is presented which indicates that a painful stimulus, as measured by its effect on the propulsive motility of the small intestine, affected albino rats much more than rats of the hooded variety. It is suggested that hooded rats, which are more closely related to the wild rat, may be less susceptible to external painful stimuli than are albino rats.

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SOCIETY PROCEEDINGS

NEW YORK NEUROLOGICAL SOCIETY AND THE NEW YORK ACADEMY OF MEDICINE, SECTION OF NEUROLOGY AND PSYCHIATRY

Joint Meeting, March 10, 1953

RICHARD M. BRICKNER, M.D., President, New York Neurological Society, *Presiding.*

PANEL DISCUSSION OF EVIDENCES FOR THE NONPSYCHOGENIC ORIGINS OF PSYCHOSES. I. SOME CONSIDERATIONS OF THE ROLE OF THE ADRENAL CORTEX IN THE ORIGIN OF THE PSYCHOSES. HUDSON HOAGLAND, PH.D. Worcester Foundation for Experimental Biology, Shrewsbury, Mass. (*by invitation*).

A group of us at the Worcester Foundation and Worcester State Hospital has studied the adrenocortical physiology of male schizophrenic patients over the past ten years. We have found that, on the average, under resting and fasting conditions, and also under conditions of stress, the patients' urinary excretion patterns, reflecting adrenocortical function, display differences from those found in normal men of the same age range.

Thus in a study of 72 normal men and 67 schizophrenic patients we found that at rest the patients excrete more 17-ketosteroid than do normals and less total corticoid, much more sodium, somewhat more potassium, the same amount of uric acid, and much less inorganic phosphate. These differences are all statistically significant. The patients excrete more than the normal percentage of beta-ketosteroids and considerably less than normal nonketonic steroid. Chromatography of urinary steroids has demonstrated 35 substances, 29 of which are present in all normal urines. While relatively few patients and normals have as yet been examined by chromatography, preliminary evidence indicates suggestive differences of patterns of specific steroid excretion in the two groups.

Following three standardized stress tests and also the injection of 25 mg. test doses of ACTH the patients are found to be considerably less adrenally responsive on the average than are the normals. Under these test conditions percentage increases in urinary 17-ketosteroids, uric acid, sodium, and potassium are considerably less in the patients. On the other hand, the patients display marked increased output of phosphates not seen in the normals. No differences in percentage changes of "cortins," lymphocytes, or eosinophils were found to differentiate normal and schizophrenic groups. Similar differences in adrenal responsivity to stress and to ACTH have

been confirmed by two other independent groups of investigators. There is evidence of abnormal adrenal responsivity in other forms of psychoses.

Our findings do not prove that the adrenal abnormalities cause the psychosis; they may be a result of it. It is, however, known that psychosis may accompany hyperplasia of the adrenal and may result from massive, repeated doses of ACTH and cortisone in persons hitherto nonpsychotic. Studies under way of bilaterally adrenalectomized schizophrenic patients maintained on cortisone and on other forms of replacement substances should shed light on the relation of the steroid abnormalities to psychosis.

2. Evidences from Studies of Childhood Schizophrenia. Lauretta Bender, M.D.

Present definition of childhood schizophrenia: a maturational lag at the embryologic level in the biologic processes underlying organismic behavior with an embryonic plasticity characterizing the disordered behavior in every area. Etiologic factors are heredity with a precipitating physiologic crisis which may be birth.

The diagnosis has been made at Bellevue Hospital in 626 children, aged two and one-half to 12 years, between 1934 and 1951, inclusive. It was confirmed from five to 15 years later in 1950-51, in 89 per cent of 143 cases diagnosed between 1938 and 1946. The patients were then 11 to 28 years old. Thus schizophrenic children become schizophrenic adolescents and adults. Forty per cent of these had one parent known or suspected to be schizophrenic. We have observed characteristic (plastic) disturbances in behavior in all those areas outlined by Gesell in *Embryology of Behavior,* i.e., (1) homeostasis (with psychosomatic disorders); (2) respiratory patterns (with disorders in associated functions of speech, language, and thought); (3) sleep and waking patterns (with disturbances in states of consciousness); (4) muscular tone; (5) tonic-neck-reflex attitudes (disturbances in postural reflexes and whirling motility).

Statistical analysis of diagnostic criteria shows that those derived from the above dysfunctions and nearest the biologic core of the organism as most significant in the differential diagnosis of childhood schizophrenia from psychogenic behavior disorders.

Maturation in the first three years of schizophrenic children deviates from Gesell norms with a variable unevenness, with the common feature of an embryonic lag and plasticity, starting from birth. In contrast to the findings of Leo Kanner, that the young autistic child comes only from the homes of cold, "refrigerator," oversophisticated, overeducated parents, we found, when we reviewed the background of 90 schizophrenic children, age two and one-half to six, that every type of home was represented, least often the oversophisticated, most often intact (two parents), interested (or overinterested) middle class homes with a strong (over 40 per cent) family history of schizophrenia, and some homes were of the very worst, while some infants had been placed in early substitute homes, having been abandoned or removed from psychotic parents.

3. Pavlov's Experimental Work and Psychoses. Joseph Wortis, M.D. (*by invitation*).

It is not widely enough known that Pavlov in the last decade of his life turned his interest to problems of clinical psychiatry. Starting from his observations of the peculiarities of response encountered in dogs in various stages of deepening inhibition, he concluded that the symptomatology of schizophrenia corresponded to that of partial inhibition and that schizophrenia was a condition of chronic hypnosis, due to a weakening of the cortical cells, and to the compensatory protective inhibition. In additional to constitutional factors, he believed that toxins, infections, endocrine imbalance, life stresses, exposure to conflict, and the condition of the organism could all contribute to this weakness. He regarded obsessions and paranoia as conditions in which a fixed focus of excitation was maintained on the cortex, surrounded by normal cortex in the former case and by inhibited cortex in the latter. He attached great importance to the therapeutic value of protective inhibition and encouraged the use of sleep treatment. He regarded the manic state as a reflection of labile explosive excitation, with an intense but brief response, corresponding to a condition of irritable weakness. His classical demonstration of the experimental neurosis that develops when the organism is exposed to insoluble or very difficult problems of discrimination has wide implications for clinical psychiatry. It is unfortunate that so much important recent work by Pavlov's pupils is not being abstracted in our medical journals. We must agree with Pavlov who said that psychiatrists "will inevitably have to reckon with these fundamental pathophysiological phenomena."

4. Experimentally Produced Abnormal Mental States. Paul H. Hoch, M.D. Department of Experimental Psychiatry, New York State Psychiatric Institute, New York.

Experimentally produced abnormal mental states were discussed. The effects of mescaline and lysergic acid and the changes which these drugs produce in normal individuals were described. Affectual, perceptual, and behavioral changes as well as hallucinations, delusions, and depersonalization changes produced by these drugs in normal individuals were discussed.

The effects of mescaline and lysergic acid on schizophrenic patients were also reported. It was found that physiologic changes were produced in these patients and their mental symptomatology was markedly aggravated. Mescaline and lysergic acid are drugs that disorganize the psychic integration of the individual. This disorganization is much more apparent in scchizophrenics than in normals. The relationship of these investigations to the organic etiology of schizophrenia was discussed. More detailed information can be obtained from the following articles: "Experimentally-produced Psychoses." *Am. J. Psychiat., 107:* 607, 1951. "Effect of Drugs: Theoretical Considerations from a Psychological Viewpoint." With J. P. Cattell and H. H. Pennes. *Am. J. Psychiat., 108:* 585, 1952. "Effects of Mescaline and Lysergic Acid (d-LSD-25)." With J. P. Cattell and H. H.

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Discussion.—Dr. Leonard Cammer: I would like to ask Dr. Hoagland whether any of his studies indicate that disturbances in adrenal activity influence cerebral metabolism or whether there is any relationship between the disequilibrium in adrenal cortex secretions and disturbed brain metabolism. Also, I wonder if Dr. Hoagland would care to comment about his work with perfusion of adrenal glands and new information about its relationship to schizophrenia.

Dr. Hoagland: We have investigated the effects of adrenocortical hormones on cerebral metabolism and electrical properties of the brains of rats. We found brain slices and homogenates to respire at the same rates whether taken from adrenalectomized or normal rats. However, our in vivo studies indicate a decreased brain blood flow and decreased brain oxygen consumption with an accompanying slowing of the EEG in salt-maintained rats after adrenalectomy. The blood flow, oxygen consumption, and EEG frequency are restored by certain adrenal steroids but not by others. We have also found conduction time from foot to somatic sensory cortex to be enhanced after adrenalectomy. The sciatic nerve shows decreased excitability in adrenalectomized rats. These factors may also be restored by the administration of suitable steroids. Thus, in the rat, adrenal corticoids do influence both metabolic and electrical properties of the nervous system.

The second part of Dr. Cammer's question asked about perfusion studies of adrenal glands at the Worcester Foundation. Dr. E. Romanoff has used techniques developed by our colleagues from their perfusion studies of beef adrenals to investigate steroidogenesis of human adrenals especially following ACTH administration to the perfusing blood. Some 20 adrenals removed from patients suffering from cancer, hypertension, or schizophrenia have thus been studied. Romanoff has chromatographically demonstrated 30 to 40 substances primarily of steroidal nature in the perfusate after ACTH. Pattern differences in excretion of these substances in relation to several diseases, including schizophrenia, are being studied and will be reported on later.

Dr. Walter S. Boernstein: In regard to Dr. Hoch's presentation, the experimental investigation of psychoses by the application of such drugs as mescaline and lysergic acid brings us closer to a solution of the problem of the relationship between symptomatology of psychoses and brain processes. Although the results of Dr. Hoch's research do not as yet warrant the formulation of definite assumptions, one ought nonetheless to raise the

question: which systems of the brain are predominantly involved in such abnormal states as have been discussed here tonight? From this point of view, two circuits in the brain should be distinguished, viz: (1) The thalamo-cortico-thalamic circuit which subserves man's relationship to the outside world, and (2) the hypothalamo-cortico-hypothalamic circuit which chiefly subserves the individual's relationship to his inner world.

In schizophrenic states the equilibrium between the individual's relations with the outside and with his inner world is disturbed in favor of the latter. The hypothesis arises that in these states the hypothalamo-cortico-hypothalamic circuit becomes functionally predominant. Experiments which I began years ago, but had to abandon prematurely, would tend to justify this hypothesis. In this connection, one would do well to consider the theoretically important "uncinate state" with its hallucinations in dream-like conditions. (Preliminary reports in *Proc. Rudolf Virchow Med. Soc.*, 1950; Proc. XIII. Internatl. Psychol. Congr. Stockholm, 1951).

BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

Meeting of April 16, 1953

RAYMOND D. ADAMS, M.D., PRESIDENT, *Presiding*

AUDITORY HALLUCINATIONS IN ALCOHOLISM. MAURICE VICTOR, M.D. (*by invitation*), AND JUSTIN M. HOPE, M.D. (*by invitation*).

This communication is concerned with the clinical features of 70 patients (14 females and 56 males) who presented auditory hallucinations in an otherwise clear sensorium. All the patients were alcoholics of long standing; in 61 per cent alcoholism was present in the immediate family; 63 per cent of the marriages among our patients ended in divorce; one-third of the patients suffered previous attacks of alcoholic neurologic disease, often different in nature from one episode to another. The onset of the hallucinations in 85 per cent of the instances was in the period that followed complete cessation of drinking. The longest period of complete abstinence preceding the onset of hallucinations was seven days. The hallucinations were almost always vocal, and in 75 per cent of the cases were derogatory and threatening in nature. Orientation and memory were well preserved during the hallucinatory episode, though insight was usually lacking, and often not regained for days to weeks following the cessation of the hallucinations.

In the majority of cases the hallucinations lasted less than six days. In this group the hallucinations were vivid, and in all instances behavior was appropriate to the hallucinatory content throughout the illness. In sharp contrast was a group of 8 patients in whom the hallucinations lasted six weeks to eight months. Four of the 8 patients, following an initial period

of disturbed behavior, became quite resigned and unperturbed although still actively hallucinated. Thus, their behavior became inappropriate and they voiced persecutory delusions which were not dictated by the hallucinatory content.

Finally, we encountered 3 patients with a schizophrenic illness who in addition suffered transient episodes of vivid hallucinations in relation to the excessive use of alcohol.

Discussion.—Dr. Robert Fleming: I found this an interesting paper and the results and conclusions coincide with my experience closely. There are a number of questions. (a) This is a valid way to approach the problem, objectively, statistically, and without preconceived ideas, in contrast to so many psychiatric papers, especially psychoanalytical where that approach does not exist. One thing which interested me was the geographical distribution: these cases do not seem to occur in England; they occur on the Continent and here. Is there some racial distinction in cases with patients who have D.T.'s and acute hallucinosis? I am impressed by the evidence that the prepsychotic personality does not have much to do with the determination of the symptoms of these cases. At the Boston Psychopathic Hospital we had a Scotchman in his early 40's who had D.T.'s by night and acute hallucinosis by day for a period of about a week.

Dr. Wilfred Bloomberg: I hoped somebody would mention the relationship between functional and the organic in these matters. Work with lysergic acid and Schilder's report on temporal lobe tumors all cut across this line. I don't think we know where alcohol acts, either as primarily a toxin or secondarily by its accompanying nutritional deficiency. We do know that as a toxin it seems to act most strongly on the vestibular mechanisms with ataxia and staggering as an early symptom. When you add the material developed by Penfield's work on auras and on formed and unformed hallucinations as a result of stimulation, we have many questions raised in relation to the problem of organic or functional localization of hallucinations and the problems of insight or lack of insight. These, however, are questions which I think will take some time to answer.

Dr. Morris Yorshis: I come from Methuen where there was a murder of 8 people by an alcoholic with hallucinations of the paranoid reaction type. Does it make any difference what a patient drinks?

Dr. Bruce Sloane: In regard to visual perseveration, Saltzman tested eidetic imagery in hallucinating alcoholics, essentially by the projection of after-images without finding eidetic tendencies. Thus it might be said that they did not show demonstrable visual perseveration.

Dr. D. Denny-Brown: Is there anything corresponding to an eidetic image in auditory function?

Dr. Sloane: No, perhaps one might attempt to construct one by the use of nonsense syllables.

Dr. Bloomberg: I wonder what Dr. Hope is implying when he speaks of the hallucinations occurring after a period af abstinence. Does he believe the abstinence a contributing cause, or is it incidental? This is not an

unimportant question. The problem of whether or not DT's is a withdrawal syndrome and of how to treat it—whether by administration of alcohol or not—appears to me to be reopened by what Dr. Hope has said. I have long believed that delirium tremens, whatever the accompanying vitamin deficiency, was primarily a toxic disorder and that one did not treat intoxication by giving the toxin which caused it. I wonder if Dr. Hope would comment about this.

Dr. Hope: In regard to Dr. Fleming's statement about geographical distribution, we have some data on this point but have not yet analyzed them. Dr. Bloomberg asked about abstinence. That is a very good point and we are not attempting to dodge the issue. In 53 patients the actual time of the last drink before admission to the hospital was known and in over half of these the hallucinations had their onset within 48 hours of the beginning of the period of abstinence. There were some in which the history indicated that the auditory hallucinations came on while the patient was still drinking. However, the problem of relative abstinence must be considered. For instance, in some of our material on patients with delirium tremens we found from the history that preceding the actual onset of delirium tremens there were episodes of tremulousness and even hallucinations which were temporarily relieved by alcohol. Some of these histories assume the following form: The patient who has been drinking heavily by day goes to bed. When he wakes up in the morning he experiences "the jitters" which may be associated with illusions and hallucinations into which he has some insight. One patient saw the animals which were on the wallpaper in his baby's nursery moving. He took another drink and this illusion as well as the tremulousness disappeared. This pattern of drinking is carried on for a time when for various reasons, i.e., lack of money, nausea, or remorse, the patient stops drinking. It is following this period of abstinence, of varyings lengths, that the full-blown picture of delirium tremens or auditory hallucinations has its onset. This is not a new observation. Kraeplin observed it. Our material showed that in most instances the onset of auditory hallucinations occurred after a period of abstinence. Abstinence certainly plays a role in the development of all the non-nutritional alcoholic disturbances. Certain hypotheses have come to our minds to explain the role of abstinence in these disorders. However, at the present time we do not have sufficient data to arrive at a conclusion regarding the precise manner in which abstinence operates in these conditions. Although abstinence plays some role in delirium tremens, it does not necessarily follow that the administration of alcohol is a satisfactory treatment for delirium tremens once it has developed. We have given some of our patients alcohol while they were in active delirium. The administration of alcohol in these patients did not prevent the delirium from running its usual course.

Pertaining to the recent tragedy in Methuen, a question was asked regarding the relationship between the type of alcoholic beverage consumed and the type of abnormal behavior resulting therefrom. We have been able to find out in most instances exactly what the patient drank and the amount

consumed. I do not believe that one can correlate the type of illness with the type of alcoholic beverage, i.e., whiskey, ale, wine, etc., employed. More important to the alcoholic illness was the pattern of drinking and the amount consumed rather than the type of alcoholic beverage used.

Dr. Bloomberg brought up a point regarding the vividness of the hallucinations. Throughout the alcoholic illnesses the vividness of hallucinations is quite apparent while in some of the so-called "functional" disorders the hallucinations are less vivid. I do not believe that the content of the hallucinations has much to do with the fundamental physiologic disturbance that exists during the illness.

THE TRIOPATHY OF DIABETICS. HOWARD F. ROOT, M.D.

Clinical lesions of the nervous system occurring in diabetic patients in a general hospital population consist chiefly of diabetic neuropathies and cerebral vascular accidents. This distribution is due to the fact that in a hospital population where there are 2,000 diabetic admissions per year, as at the Deaconess Hospital, the majority of patients are past the age of 45 years and many are patients in for surgical treatment of malignant lesions or for cerebral vascular accidents. However, if such a group of diabetic patients be analyzed according to the age of the patient and the duration of diabetes, and if those neurologic lesions which are presumably of nondiabetic origin are eliminated, there will remain a large group of diabetic patients who, if observed over a period of years, show a striking association between the diabetic neuropathies, the development of malignant retinitis, and finally, the diabetic nephropathy. It is the association of these three conditions in the same patient which has led me to use the words "The Triopathy of Diabetes."

The diabetic neuropathy may manifest itself in many ways. It is certainly not limited to the peripheral nerves but may involve any portion of the nervous system. Not only may peripheral, motor, and sensory neurals be involved but spinal nerve roots and autonomic pathways concerned with temperature regulation, postural blood pressure adjustment, motor control but as well intestinal bladder function. Practically all diabetic patients who develop these diabetic neuropathies have had anteceding periods, of months or years' duration, of neglected, poorly managed, and poorly controlled diabetes. Common symptoms are pains characteristically worse at night. Various paresthesias occur. Loss of tendon reflexes of arms and legs, muscle tenderness, muscle atrophy, and finally paralysis involving the wrists. Disturbances in vibration sense, recognized clinically by diminished acuity or inability to recognize vibrations of a tuning fork are so common that in all probability such changes can be demonstrated in almost all diabetic patients who have had diabetes five or ten years or longer and who have not been under good diabetic control. The typical diabetic nocturnal diarrhea and the pseudo-Charcot joints are no longer rare.

The retinopathy of diabetes is frequently preceded by neuropathy but is often not discovered until albuminuria or hypertension have occurred.

Nevertheless, retinopathy may occur without either albuminuria or retinopathy for long periods of time. It is frequently preceded by increased capillary fragility. Indeed, it is the demonstration of the marked changes in the small capillaries and venules of the eyes which has been, together with the kidney pathology, most striking in supporting the present concept that the most characteristic and specific pathology of diabetes is to be found in these changes in the small vessels. In the eyes, therefore, retinal hemorrhages and the typical aneurysms are found. In the diabetic this early bland retinopathy frequently proceeds in a few years to the malignant retinitis proliferans. Here separation of the retina may occur and blindness may often result. In practically all cases retinitis sooner or later is associated with the typical Kimmelstiel Wilson lesions in the kidneys or what we have called the diabetic nephropathy.

The diabetic nephropathy is ushered in clinically by apparently bland edema but within a year or so the edema becomes permanent, hypertension develops, retinal lesions advance, and sooner or later uremia results. At autopsy, the typical globular hyaline masses are found in the glomeruli together with chronic pyelonephritis, nephrosclerosis, and atherosclerosis.

At present, the demonstration, by newer staining methods and clinical methods, that the material found in the hyaline deposits in the kidneys and the basement membranes of the eyes and the cells of the pancreas is a polysaccharide or a polymucosaccharide has for the first time given support to the concept that the essential pathology in this malignant association of lesions has to do with the polysaccharide, either simple or complex, and we have, therefore, for the first time the beginning of a comprehensive chemical term for the varied and malignant pathology of severe diabetes.

Treatment and prevention are now for the first time demonstrated to rest on the control of the diabetes. A follow-up of 450 young diabetic patients observed from periods of 10 to 30 years shows clearly that those patients under good control are free of albuminuria and the diabetic triopathy after periods of 20 to 30 years, whereas these lesions are present in 75 to 80 per cent of the patients after 15 years of diabetes if it has not been controlled by careful daily balancing of diet, urine tests, and insulin dose.

Discussion.—Dr. D. Denny-Brown: I am surprised that neuritis involved as many as 55 per cent of chronic diabetics, though it is certainly not rare. Recently we had at the Boston City Hospital an elderly patient with diabetic neuropathy of quite recent origin, whose diabetes had been treated carefully for a number of years. She had most meticulously followed her urinalysis. She could swear that not once in the last three years had there been on any occasion the presence of sugar. Yet in the period of the last six months, she had developed quite a severe diabetic neuropathy. This story, of course, is not unusual. What was striking was that her blood sugar values were around 180-200 mg. on her regular dosage of insulin. It struck me that it was a problem like combined systemic disease, in which the patient needs more liver extract than is necessary to restore the blood picture, in order to reverse the neurologic signs. I wonder whether adequate treatment of this type of

diabetes requires maintenance of blood sugar levels below 100 mg./100 ml.

Dr. Samuel H. Epstein: I should like to say that I am not an expert. The data I have observed clinically made me feel that there were two groups of patients with neuropathy: those associated with demonstrable signs of arteriosclerosis and those without such clinical signs. Of those two groups, the patients who did well clinically were those that were relatively free of arteriosclerosis. From a prognostic standpoint, one could use that point regardless of what specific treatment the patients were getting. I do not know why these clinical pictures occur. I am intrigued with Dr. Root's suggestion that the same underlying pathology exists in neuropathy as in the other two forms of diabetic triopathy.

Dr. John Sullivan: There appears to be two forms this will take: first, a fairly symmetrical distal neuropathy generally rather slow to develop and this, one would expect to result from some metabolic disturbance. The other, possibly related to interference with the blood supply of the nerve, for in this type there is the rapid development of a single or multiple asymmetric neuropathy. It has impressed me that there is no one common explanation for the neuropathy, but a multiple etiology.

Dr. Root: I suppose that in any human being with a chronic disorder there are multiple etiologic factors. However, we seek and can frequently succeed in distinguishing between those factors of major or primary importance and those factors proved to be of secondary or slight importance. In the patients I have studied such factors as hypertension and vascular disease were eliminated and we used patients with onset of diabetes early in life and studied the progressive development of the three conditions under discussion. Thus, a recent case, a boy of 20 years showed a severe neuritis involving the legs. He has had diabetes for several years with poor control. I can predict he will have retinitis within five years. At that time he will have the evidence of beginning vascular disease, apparent first in the small vessels, and venules, and arterioles. It is this change in the small vessels which is most specific for diabetes. In fact, it is this severe lesion in the arterioles which has been found to be 100 times as common in diabetics as in nondiabetics. The diabetic neuropathy is not confined to the legs as is well illustrated by a boy of 16 years who had diabetic coma. During his recovery both arms became completely paralyzed and the diagnosis of anterior poliomyelitis was made. However, he made a complete recovery and now, 10 years later, is working hard. The diagnosis had to be altered to diabetic neuropathy. Nocturnal diarrhea, symptomatology in the fingers and arms as well as other evidences of involvement of the autonomic system occur.

I merely suggest that the association of these three conditions occurring so commonly in diabetic patients under poor control may have a basis in pathologic changes characterized by deposits of material which is polysaccharide in nature. No doubt this is merely one phase but I believe we are on the road to a new understanding of the problem.

BOOK NOTES AND REVIEWS

Books received are acknowledged and given a brief description in this section. Selections serving a variety of interests will be made from these for a more extensive review, as far as space will allow.

BOOK NOTES

Association for Research in Nervous and Mental Disease. PROCEEDINGS OF THE ASSOCIATION: PSYCHIATRIC TREATMENT, Volume XXX. [Baltimore: Williams and Wilkins Co., 1953. Pp. xiv + 450. $9.00.]

This volume is the latest in the series of A.R.N.M. research publications. Under the editorship of S. Bernard Wortis, Morris Herman, and C. C. Hare, we have the record of the meetings held on December 14 and 15, 1951 in New York, devoted to a discussion of all phases of psychiatric treatment. There are thirty-four papers reported here with the discussions they evoked at the meetings. Divided into eight sections, there are papers on individual and group therapy, biological, electrical, and pharmocological treatments, and finally eight papers on neurosurgical approaches. Many distinguished and well known names appear in the list of contributors.

The total impression of this volume is that the authors were less interested in the psychological-psychoanalytic approach to therapy than they were in the biological-physical. The weakest and least valuable papers were those which discussed individual and group psychotherapy. The assessment of the biological-physical therapies were seemingly enthusiastically, carefully, and extensively studied and discussed. On the whole nothing very new, nothing very different seems to have come out of these meetings. But rather, there was a sober weighing of what advances have been made in the past few years in psychiatric treatments. Nobody at the meetings seemed to be particularly optimistic that the open sesame has been found; doubtlessly, there is none.

The volume is beautifully printed, carefully edited, and provides an excellent reference work for people in the field. JOSEPH ZINKIN.

Beck, Samuel J. RORSCHACH'S TEST, VOL. III, ADVANCES IN INTERPRETATION. [New York: Grune and Stratton, Inc., 1952. Pp. viii + 301. $5.50.]

In this third volume of Beck's on the Rorschach technique, he provides a detailed demonstration of his interpretation of the Rorschach as he currently uses it. The records of four male patients in treatment are meticulously explored and provide the basis for the present volume. Beck stresses the need for more detailed knowledge about anxiety since

he finds this condition so pervasive in these four randomly selected cases.

In addition to the Rorschach interpretations, Beck provides relevant psychiatric and social work data about the four cases. In view of Beck's stated interest in a global view of personality, some readers may wonder why Beck did not utilize additional psychological and projective techniques to supplement his Rorschach findings. GEORGE GENN, PH.D.

Fliess, Robert, THE REVIVAL OF INTEREST IN THE DREAM: A CRITICAL STUDY OF POST-FREUDIAN PSYCHOANALYTIC CONTRIBUTIONS. [New York: International Universities Press, 1953. Pp. 164. $3.00.]

This small monograph appeared in the Yearbook of Psychoanalysis, Volumes VI and VII. It is now reprinted together with a paper by the author on the "Spoken Word" as a separate volume. Dr. Fliess takes up Freud's complaint expressed many years ago that there was a lack of interest in the dream among analysts. Freud did not at all agree that we "had nothing more to say about the dream." It is Fliess' contention that the theory of the dream is not only incomplete, but that it contains a number of errors, that it is in want of addenda and emendation. Thus the present volume reviews and re-examines the dream situation, it surveys briefly the bulk of the psychoanalytic literature on the subject, and presents what the author thinks has been achieved. Essentially this book is a critical review and evaluation of the main work of the last twenty years. Dr. Fliess has some very pertinent and valuable comments to make in a brief chapter of "General Observations." His paper on the "Spoken Word" in dreams elaborates and extends Isakower's suggestion that since the nucleus of the superego is auditory, words in a dream may be the contribution of the superego to the dream.

This is a useful little volume bringing us up to date on what has been or what has not been added to Freud's work on the dream as originally formulated. Fliess writes clearly and compactly. Hints and approaches useful in practice are an important aspect of the papers.

JOSEPH ZINKIN.

Lorand Sandor, M.D. (ed.) THE YEARBOOK OF PSYCHOANALYSIS, Volume 8. [New York: International Universities Press, 1953. Pp. 383. $7.50.]

This is the eighth annual volume in the well-known and useful series of annual reprints of papers published in various analytic journals during the past year (1951-52). Twenty-four papers have been selected for this volume. None, however, is of particularly outstanding quality. It is too much to expect that each and every year will bring something unique or of exceptional value. Peaks are rare in science. There are five papers concerning Freud himself or his career, with a reprinting of Bernfeld's little biography of Freud as a doctor—the history of his development as a student of medicine. Kris contributes a good paper on ego psychology and interpretation in therapy. Lewis B. Hill's inter-

esting article on "Anticipation of Arousing Specific Neurotic Feelings in the Psychoanalyst" should be carefully considered. There are other papers, all providing profitable and interesting reading. There is no question anymore of the usefulness of these annuals, as attested by their popularity and the increasing longevity of the series. JOSEPH ZINKIN.

Riese, Walter. THE CONCEPTION OF DISEASE, ITS HISTORY, ITS VERSIONS AND ITS NATURE. [New York: Philosophical Library, 1953. Pp. 120. $3.75.]

In contrast to the majority of books on medical historical subjects, which are often only enumerations of the lives and deeds of physicians of historical interest, the book of Dr. Riese is a philosophical study of the history of medical thoughts as they arose from a continuously changing cultural background. Although each period of civilization formed its own particular conception of disease based upon its prevailing philosophy, the preceding conceptions as a rule, never completely passed out of existence. They either continued to exist side by side with the new conception or were integrated, with or without alterations, into the latter. The birth of our present day's conceptions of disease is found in the Greek-Roman culture as represented by Plato, Hippocrates, Galen and others. These elementary conceptions, including their anthropological and moral implications grew, unfolded and matured with all major developments in civilization. Nevertheless, "the modern physician trying to make a diagnosis proceeds in the same way and uses the same intellectual avenues as his Roman forerunners." What has changed or has been added are mainly perfections in techniques, clarification of certain issues and shifts of emphasis. The phenomenal rise of anatomy in the Renaissance gave full significance to the more regional aspects, the rise of pathology starting in the 18th century climaxed by Virchow in the 19th century emphasized the lesions, bacteriology at the end of the 19th century began to widen the etiological aspect, while the psychological conception of disease has been developed to a new height more recently. However, some of the basic elements of even the latter conception can be traced back to Hippocrates.

Special chapters deal either with the various conceptions of disease which still exist distinctly side by side: the anatomical, the physiological, the etiological, the social, the psychological and the biographic conception, or with conceptions which are now more or less abandoned: the stoic, the cosmological, the anthropological, the moral, the historical and the entologic conception. In these chapters not only the historical-philosophical origin of the various conceptions of disease are discussed but also their justifications, uses and limitations. A special chapter deals with Leonardo da Vinci's contributions to the genesis of the anatomical conception and another chapter discusses "disease and art." Disease does not create a new style in an artist, but may release the style, which is the integrated and final expression of an individual's entire existence.

More than 100 footnotes and a carefully prepared index increase the value of this book, which contains numerous provocative thoughts for every physician with some philosophical or historical interests. The whole book is born of an intimate knowledge of medical history and of philosophy, acquired by the author during his many years of study, research and teaching activities in neurology, neuropathology and history of medicine in three different cultural surroundings: Germany, France and the United States. ERNST FISCHER, M.D.

BOOK REVIEWS

Reiwald, Paul. SOCIETY AND ITS CRIMINALS. [New York: International Universities Press, 1950. Pp. xix + 315. $4.50.]

A criminal lawyer and now reader in criminology at the University of Geneva presents in this book the very fascinating approach of law and psychoanalysis working hand in hand. The author states,

> "It was particularly fortunate for me that I became acquainted with psycho-analysis in the last years in which I was active as a criminal lawyer. I could call in psycho-analysts on cases, work together with them and myself analyse the criminal. Since then my conception of the criminal, man and society has been completely altered. The relation between the law-abiding and the asocial person no longer remained an isolated special field for me; this relationship became the indispensable key to the understanding of everyday human relations. The most important facts that I learnt from psychoanalysis were, firstly, that the criminal must no longer be regarded as one figure isolated from society (society here and the criminal on the other side), and secondly, that all criminal psychology must commence with the psychology of the society which inflicts the punishment. A psychology of the criminal which does not take into consideration the mutual interdependence of social and asocial persons is, as such a falsification of the facts.

This attitude is highly commendable and this reviewer wishes Reiwald would write a short volume which might be used to convert his brothers of the bar to his way of thought. Certainly here is a book which should be read by every member of the legal profession and might serve as an introductory technique to break the wall of rigidity which separates psychiatry and law from their reasonable joint function. This approach is apparent in his discussion of the social and asocial person and here his evaluations of criminal law and punishment are superb.

The second chapter is a "must" for every psychiatrist in this field and could well be reprinted and forced-fed to every lawyer. Its title,

"The Resistance of the Lawyer to Psychology" is self-explanatory and the entire discussion is well worth reading many times. Further discussions, such as the judge and the father and the criminal in fantasy lead to a psychoanalytic interpretation of the behavior of our culture towards the criminal. This behavior is further stressed in a discussion of the psychology of the crime novel and we find considerable distortion from these fantasy viewpoints when compared with the succeeding chapter which deals with the criminal of reality. It must be borne in mind in this chapter that the author deals primarily with European problems and his knowledge of American function is overwhelmingly literary in origin. As such, occasional errors in conclusions result and one wonders if his general thesis that "the repression of crime has proved to be no final solution but a serious latent condition of danger. The danger arises from earlier events in society which brought about the removal of repression, on the whole successfully. Criminal law does not possess the means of combating this danger" could be reasonably adapted in American culture. His discussions of primitive man, especially the Commanche Indian, again spring from literary, not real, contact and his notion comparing prison groups with the Commanche Indians hardly works out.

One of the longest parts of the book deals with the genesis of punishment and we now have the author at his best, writing in a field in which he is most familiar. He disagrees considerably with the ordinary attitude in criminal law and rightly indicates that the judge and councils are not only men with their ordinary emotions, but are part of the mass of a concrete presence which is in the court room and of an abstract presence which we know of as the public. Here his discussion is extremely important to psychiatrists since they are subtly subjected to such pressures in their examinations and testimony concerning criminals on trial. These discussions of aggression represent a well developed climax to the entire book and indicate keen legal knowledge and excellent psychoanalytical insight in the dynamics of the functions of the court and its actions.

One must question his final conclusion which represents a complete agreement with Forel who stated, "in my opinion the future of criminal law lies in its abbrogation, that is, the removal of all rights to punish." This notion will undoubtedly raise a tremendous series of questions and one wishes the author could have added some substitute suggestions for handling the current types of criminal activity. Certainly at present psychiatry is unable to supply successful answers to many of these problems and until such answers are forthcoming, there seem little expectancy for such a complete reversal of attitudes on the part of Western society. DOUGLAS M. KELLEY.

Reymert, Martin L. (Ed.). FEELINGS AND EMOTIONS: THE MOOSEHEART SYMPOSIUM IN COOPERATION WITH THE UNIVERSITY OF CHICAGO. [New York: McGraw-Hill Book Co., Inc., 1950. Pp. xxiii + 603. $6.50.]

In 1927 was held the Wittenberg Symposium on Feelings and Emotions which was later published under the same editor by the Clark University Press. This was a conference on an international scale which included leading scientists in the various disciplines. Under the sponsorship and financing of the Loyal Order of the Moose, there was again held, some twenty year later, another such symposium, the report of which is here presented to us. Some forty-seven prominent authorities in the fields of psychology, psychiatry, physiology, psychoanalysis, etc. submitted papers which are reprinted in this volume.

Many contributors were from abroad. Babkin (Montreal), Henri Pieron (Paris), A. E. Michotte (Louvain), Buytendijk (Utrecht), John Elmgren (Gothenburg), David Katz (Stockholm), L. van der Horst (Amsterdam), Odegaard (Oslo), Frisby (London), R. H. Thouless (Cambridge), and Sir Cyril Burt (London).

The names of American contributors included J. H. Masserman, who gives us a stimulating and important report on the bio-dynamic psychoanalytic approach to the problems of feeling and emotion. Others were Samuel J. Beck, Thomas and M. French.

H. S. Liddell's paper on animal origins of anxiety should be read by every psychiatrist. We see here, under experimental conditions, the induction of neurosis and catatonia by means of simple repetitive, conditioned reflect experiments. Very obviously neurotic and psychotic reactions are a common reaction of the nervous systems of both man and some of the lower animals. To quote him, "Perhaps we are fundamentally concerned with certain time constants of the central nervous system, and our rigidly timed afferent impulse volleys may be traumatic because of a reasonance effect depending upon the 2- or 5-minute periodicity of the 10-second warning signals. It is possible that such problems as *choice of neurosis* may eventually be reduced to such simple considerations as these." All "cyberneticists" please note.

Philip Bard gives us his recent work on central nervous mechanisms for the expression of anger in animals. Harold G. Wolff, Ernest Harms, Chester W. Darrow, James G. Miller, Saul Rosenzweig, Margaret Mead, David Shakow, Carl R. Rogers, Arnold Genee, George Lawton, F. Fearing, Tregant Burrow, Gardner Murphy, Herbert S. Langfeld, are some of the well-known names writing here.

Thus this book collects some important current theoretical and experimental attacks on the problems of feelings and emotions from various approaches (analytic, phenomenological, biological and physi-

ological). Much new thinking and experimental verification is offered which would ordinarily remain far more scattered and inaccessible. Recent psychological studies in the fields of child development, personality, education, industry and even anthropology have grappled with the affective problems involved. A wide variety of sources are drawn upon and many important fields are contributing to the solution of one of the three most important problems of psychology, the other two being "thinking" and "willing". We are thus brought up to date.

The total impression of the book is that we are still far from a solution;—we do not even have a consensual definition of feelings and emotions. Yet some of the papers do encourage one to think that the problem can be solved and that we are closer to a solution than twenty years ago. The volume is recommended to all working in this area who want to know what is being done in various foreign and native centers of research. JOSEPH ZINKIN.

BOOKS RECEIVED FOR REVIEW

FREUD, S. (Stengel, E., trans.) *On Aphasia.* International Universities Press, New York City.

ROCKEFELLER INST. FOR MED. RES.—*Studies from the Rockefeller Inst. for Med. Res.*—Reprints, Vol. 147, 1953. Rockefeller Inst. for Med. Res., New York City.

SCHILDER, P. (Rapaport, D., ed. and trans.) *Medical Psychology.* International Universities Press, New York City.

NOTES AND NEWS

The following lectures will close the Fourth Annual NORTH SHORE HEALTH RESORT Lecture Series on TREATMENT IN PSYCHIATRY: Mar. 3, 1954. The Role of the Family in Emotional Disorders, Jules Henry, Ph.D., Assoc. Prof., Anthropology, Washington U., St. Louis, Mo.; Member, Com. on Child Development, National Research Council; Assoc. Editor, Amer. Jour. of Orthopsychiatry. Apr. 7, 1954. The Treatment of Children, Irene M. Josselyn, M.D., Staff member, Chicago Institute for Psychoanalysis; Consultant, Several Social Agencies. May 12, 1954 (Second Wed.). The General Practitioner and the Discharged Psychiatric Patient, Kenneth Appel, M.D., President, American Psychiatric Association; Professor and Chairman, Dept. of Psychiatry, University of Pennsylvania. June 2, 1954. How the General Practitioner Can Contribute Toward Healthy Emotional Development, Daniel Blain, M.D., Med. Dir., American Psychiatric Assoc., Clin. Prof. of Psychiatry, Georgetown U., School of Med.; Consult. to U.S.P.H.S., Vet. Adm., Nat. Assoc. of Mental Health; Member, Expert Panel on Mental Health, World Health Organ. North Shore Health Resort, 225 Sheridan Road, Winnetka, Ill.

Based upon eight years of pioneering research and experience in the relatively new field of training leaders in the skills and understandings necessary for developing effective groups, the *National Training Laboratory in Group Development* will hold its usual three-week summer laboratory session at Gould Academy, Bethel, Maine. The dates will be from June 20 through July 10.

Approximately 125 applicants will be accepted for this session. Persons involved in problems of working with groups in a training, consultant, or leadership capacity in any field are invited to apply.

The purpose of the training program is to sensitize leaders in all fields to the existence and nature of the dynamic forces operating in the small group and to help them gain skill in operating more effectively in such a group. The training program is organized so that each trainee group of 15-20 persons is enabled to use its own experience as a laboratory example of group development. Group skills of analysis and leadership are practiced through the use of role-playing and observer techniques. Concentrated clinics give training in the skills of the consultant and the trainer in human relations skills. There is also opportunity to explore the role of the group in the larger social environment in which it exists. Finally, a major portion of the last week of the Laboratory is spent in specific planning and practicing application of Laboratory learnings to back-home jobs.

The Laboratory research program in group behavior and training methods is an important part of the training, and the use of research tools which are within the range of the Laboratory training program is incorporated into the curriculum.

The NTLGD is sponsored by the Division of Adult Education Service of the NEA and by the Research Center for Group Dynamics of the University of Michigan, with the cooperation of faculty members from the universities of California, Chicago, and Colorado, Harvard University, the University of Illinois, The Ohio State University, Teachers College at Columbia University, the University of Texas, and other educational institutions. Its year-round research and consultation program is supported by a grant from the Carnegie Corporation of New York. For further information, write to the NTLGD at 1201 Sixteenth Street, N.W., Washington 6, D. C.

RELIGION AND PSYCHIATRY MEET ON COMMON GROUND OF BASIC TRUTH, CLERIC TELLS INSTITUTE

Clergymen of Four Counties at Interfaith Meeting Advised on Pastoral Counseling

Clergymen need to know that there is no basic conflict between psychiatry and religion, the Rev. John Neylen, director, missionary apostolate, Buffalo diocese, told 150 clergymen who attended an interfaith institute for clergy at Gowanda State Homeopathic Hospital on September 28. Other principal speakers at the institute for clergy from Allegany, Cattaraugus, Chautauqua, and south Erie counties included Dr. S. Mouchley Small, professor and head of the psychology department, University of Buffalo; the Rev. Harold H. Wilke, pastor of St. Paul's Evangelical and Reformed Church, Crystal Lake, Ill., Hyman M. Forstenzer, assistant director of the New York State Mental Health Commission, and Dr. Willard H. Hogeboom, supervising psychiatrist at Gowanda.

Developing his theme on needs of pastors, Father Neylen emphasized there is no basis for conflict between psychiatry and religion because "truth is truth." He pointed out that though there may be a difference in the theories and philosophies of religion and psychiatry, the basic truths of both can be used to benefit the patient. Defining basic beliefs, he stated that "we all believe in a personal God and a soul and that man is a responsible agent with a free will." Commenting that other theories had been advanced in the past, he emphasized that the trend of thought today increasingly recognizes religion as a strong factor in mental health. Father Neylen indicated that the majority of psychiatrists believe "right is right and wrong is wrong," assuring clergymen that they need not fear psychiatrists will endorse immoral or irreligious acts to reduce tension or guilt feelings of patients.

A Philosophy of Life

Discussing basic emotional needs, Dr. Small declared that a philosophy of life satisfies an important emotional need. He particularly emphasized the emotional needs of children and adolescents. Parents and their representatives, he urged, should recognize a child's need for understanding and